Archival Preservation System (APS)

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USER'S MANUAL

TABLE OF CONTENTS

1 GENERAL INFORMATION 3

1.1 System Overview 3

1.2 References 5

1.3 Authorized Use Notice 5

1.4 Points of Contact 5

1.4.1 NARA Points of Contact 5

1.4.2 Anteon Points of Contact 5

1.5 Organization of the Manual 6

1.6 Acronyms and Abbreviations 7

2 APS OPERATIONS 9

2.1 Copying Processes and Types of Copies Produced Using APS 9

2.2 Reports Produced Using APS 12

2.3 Initial Copy Process Description 14

2.4 APS User Access Levels 16

2.5 Media Storage Hardware Used by APS 17

2.6 APS Workstation Hardware 19

3 SCREEN LAYOUT 21

3.1 APS Menu 22

3.2 APS Menu Bar 23

4 GETTING STARTED 25

4.1 Logging On 25

4.2 Changing APS User Password 27

4.3 Logging Off 27

4.4 Exiting APS 28

5 HELP MENU 30

6 ENTERING MEDIA 34

7 GENERATING COPIES 38

7.1 Generating Master Copies 38

7.2 Generating Backup Copies 50

7.3 Generating Special Copies 51

7.4 Generating Replacement Copies 51

7.5 Performing Smart Copies 53

7.6 Performing Reference Copies 55
7.7 Reports Related to Copy Jobs 61
7.7.1 Viewing Non-Standard Characters on Block-Delimited files 65
7.7.2 Viewing Non-Standard Characters on Record-Delimited files 65
8 COMPARING TAPES 67
8.1 Compare Tapes Function 67
8.2 Performing Smart Compare 69
9 GENERATING DUPLICATE TAPES 72
10 COMPARING DUPLICATES 77
11 GENERATING VOLUME DIRECTORIES 80
11.1 Generating Brief Directory 80
11.2 Generating Verbose Directory 86
12 DUMP FUNCTIONS 89
12.1 Simple Dump 89
12.2 Smart Dump 92
13 TAPE MERGE FUNCTIONS 95
14 ERASE FILES FROM MEDIA 111
15 PUTTING APS IN REFERENCE COPY MODE 114
15.1 Making Reference Copies that Include Non-Standard Characters 116
16 MANAGING THE DATABASE 119
16.1 View/Edit 120
16.2 View History 126
16.3 Delete Tagged Files 127
16.4 Import/Export 131
17 VIEWING AND STORING IMAGE METADATA 134
18 MANAGING USERS 139
18.1 Adding Users 139
18.2 Deleting Users 140
19 GENERATING REPORTS 142
19.1 Reports Generated from the Report Menu Item 142
19.1.1 Line Report 142
19.1.2 Table Dump 146
19.1.3 Status Summary (STATSSUM) Report 149
19.1.4 File Type Master without Backup (FTYPE M w/o B) Report 151
19.1.5 Reference Copy Job 153
19.1.6 DOS Directory Listing 157
19.2 Catalog Reports 160
19.2.1 Listing of all Columns 161

19.2.2 Listing of all Columns without Sub-Tables 163
19.2.3 Reference Order (R1) 163
19.2.4 Preservation Request (P1) 166
19.2.5 Charge Out Slip (P3) 168
19.2.6 Preservation Request (P1) with Blanks for Output 170
19.3 Annual Sample/Annual Sample Reports 172
19.3.1 Annual Sample Reports 173
19.4 System Generated Reports 180
20 APS CONFIGURATION 182
20.1 Job Preferences 182
20.2 Char Set Preferences 184
20.3 Environment Preferences 185
20.4 Printing Preferences 186
20.4.1 Save and Reload Configuration 187
21 PRINT BARCODES 189
22 CATALOG dATABASE (CDB) DESCRIPTION 191
22.1 Primary Data Structures 191
22.2 Secondary Data Structures 196
23 APSTAR 198
23.1 Description of a TarFile (TAR Archive) 198
23.2 Create TarFiles 198
23.2.1 TarAll Option 200
23.2.2 TarList Option 208

TABLE OF FIGURES

Figure 1: APS Production Network 4
Figure 2: APS-Related View of NWME Initial Copy Process 15
Figure 3: APS Role Hierarchy 17
Figure 4: APS Menu 22
Figure 5: APS Menu Bar 23
Figure 6: APS Logon Screen 25
Figure 7: Data Source Selection Screen 26
Figure 8: APS Change Password Screen 27
Figure 9: APS Exit Confirmation Screen 28
Figure 10: APS Help Menu 30
Figure 11: APS Help Menu/ Favorite Block 31
Figure 12: Open Unit Dialog Box 32
Figure 13: Open Unit Dialog Box Help Topic 32
Figure 14: Enter Media in Catalog Dialog Box 34
Figure 15: Barcode Required Information Message 35
Figure 16: Duplicate Barcode Error Message 35
Figure 17: Volume Location Information Message 36

Figure 18: Select File Dialog Box 39
Figure 19: Open Unit/Input Volume Block with Tape Image Selection 39
Figure 20: Open Unit/Input Volume Dialog Block with 3480 40
Figure 21: Open Unit/Output Volume Block with 8mm Drive 40
Figure 22: Open Unit/Output Volume Block with 9 Track Drive 41
Figure 23: Open Unit/Output Volume Block with Disk File Drive Selection 41
Figure 24: Open Unit/Output Volume Block with CD-R Box Checked 42
Figure 25: Open Volume Dialog Box 43
Figure 26: File Number Prompt 43
Figure 27: Open File Dialog Box 44
Figure 28: Conversion Error Dialog Box 45
Figure 29: Save Error File as Dialog Box 46
Figure 30: Conversion Error File Location and Use 46
Figure 31: Error Count and Description Message 47
Figure 32: Total Number of Errors Encountered 47
Figure 33: Retain Settings Dialog Box 48
Figure 34: Filename Altered Message Box 48
Figure 35: File Continue on Next Volume Option 48
Figure 36: Barcode Print Option 49
Figure 37: Copy Status Screen 49
Figure 38: Compare Copies Dialog Box 50
Figure 39: Add Files to Database Option 51
Figure 40: Enter Barcode of Volume to be Replaced Dialog Box 52
Figure 41: Prompt to Enter Barcode of Next Volumne 52
Figure 42: Open File Dialog Box for a Replacement Copy Job 53
Figure 43: Open Unit Dialog Box for a Smart Copy Job 54
Figure 44: Open Volume Dialog Box for a Smart Copy Job 54
Figure 45: Open File Dialog Box for a Smart Copy Job 55
Figure 46: Selecting Reference Copy from the Main Menu 56
Figure 47: Open Unit Dialog Box for a Reference Copy Job 56
Figure 48: Open Volume Dialog Box for a Reference Copy Job 57
Figure 49: Next File Dialog Box for a Reference Copy Job 57
Figure 50: Fiscal Year Dialog Box for a Reference Copy Job 58
Figure 51: Job Number Dialog Box for a Reference Copy Job 58
Figure 52: Open File Dialog Box for a Reference Copy Job 59
Figure 53: Select Files Dialog Box for a Reference Copy Job 59
Figure 54: Copy More Files Dialog Box for a Reference Copy Job 60
Figure 55: Copy to CD Dialog Box for a Reference Copy Job 60
Figure 56: CD Volume Name Dialog Box for a Reference Copy Job 60
Figure 57: Smart Copy Report 62
Figure 47: APS File Conversion Error Report. 64
Figure 48: APS One-Line With Path Job Report 68
Figure 49: APS One Line with Path Job Report 70
Figure 50: Duplicate Tapes Setup 72
Figure 51: Open Unit Dialog Box for Duplicating Tapes 73
Figure 52: Enter Disk Filename Duplicate Prompt 73
Figure 53: Duplicate Complete Dialog Box 74
Figure 54: Duplicate Tape Report 75
Figure 55: Open Unit Dialog Box for Comparing Duplicate Tapes 77
Figure 56: Comparing Duplicate Tapes Report 78

Figure 57: Brief/Verbose Directory Dialog Screen 80
Figure 58: Open Unit Dialog Box to Add Entry to Database 81
Figure 59: Open File Dialog Box to Add Entry to Database 82
Figure 60: File Already in Database Message Box 82
Figure 61: Brief/Verbose Directory (Tape Map) Action Message Box 83
Figure 62: Open File Dialog Box to Verify Current Database Entries 84
Figure 63: Directory Status Screen 85
Figure 64: Tape Map Report 86
Figure 65: Verbose Tape Map Report 87
Figure 66: Open Unit Dialog Box for Dump Function 89
Figure 67: Simple Dump File List 90
Figure 68: Simple Dump Report 91
Figure 69: Dump Preferences Dialog Box 92
Figure 70: Smart Dump Information Message 93
Figure 71: Simple Tape Merge Dialog Box 96
Figure 72: Smart Tape Merge Dialog Box 97
Figure 73: Open Unit Dialog Box/Input for Tape Merge 98
Figure 74: APS confirming De-Allocate Unit 98
Figure 75: Open Unit Dialog Box/Output for Tape Merge 99
Figure 76: Record Number selection for Smart Merge 99
Figure 77: Block Number selection for Tape Merge 100
Figure 78: File Number selection for Tape Merge 100
Figure 79: Tape Merge View Option 101
Figure 80: Tape Merge - Copy Blocks Dialog Box 102
Figure 81: Tape Merge - Copy Files Dialog Box 102
Figure 82: Tape Merge/Copy reached End of Media 103
Figure 83: Tape Merge/Copy Completed 103
Figure 84: Tape Merge Compare Dialog Box 103
Figure 85: Merge Synchronize Dialog Box 104
Figure 86: Synchronization Successful Message Box 104
Figure 87: Merge Synchronization Report 105
Figure 88: Merge Report 106
Figure 89: Batch Selection Display 107
Figure 90: Printing Setup Dialog Box 107
Figure 91: Set Numbers Dialog Box 108
Figure 92: Open Unit Dialog Box for Erasing Files 111
Figure 93: Open Volume Dialog Box for Erasing Files 111
Figure 94: APS prompt to Enter Number of File to Erase 112
Figure 95: Erase Confirmation Message Box 112
Figure 96: APS in Reference Mode 114
Figure 97: Reference Copy Menu Option 115
Figure 98: Reference Copy Timing Report 115
Figure 98: Conversion Error Dialog Box with Accept Copy Option 116
Figure 99: Total Number of Errors Encountered When Accepting Conversion Errors 117
Figure 100: View/Edit Dialog Box 121
Figure 101: Edit Dialog Box 122
Figure 102: Add Dialog Box 123
Figure 103: Delete Option Box 123
Figure 104: Advanced query Dialog Box 124
Figure 105: Report Option Box 125

Figure 106: History Screen 126
Figure 107: Record Selection Screen /All Records 128
Figure 108: Record Selection Screen / by Reviewer 128
Figure 109: Record Selection Screen/ by XMIS Number 129
Figure 110: Delete Tagged Records Information/ Action Message Screen 129
Figure 111: Confirm Delete All Message 130
Figure 112: Delete Tagged Files One at a Time 130
Figure 113: First Confirm Delete Message 131
Figure 114: Second Confirm Delete Message 131
Figure 115: Image Metadata Display Box 134
Figure 116: Directory Selection Box 135
Figure 117: Directory Display 136
Figure 118: Image Metadata Report 137
Figure 119: Add User Dialog Box 139
Figure 120: Add User Confirmation Box 139
Figure 121: Delete User Dialog Box 140
Figure 122: Delete User Confirmation Box 140
Figure 123: Line Report Dialog Box 143
Figure 124: Line Report 146
Figure 125: Table Dump Report Dialog Box 147
Figure 126: Table Dump Report 148
Figure 127: STATSSUM Report Dialog Box 149
Figure 128: STATSSUM Report 150
Figure 129: FTYPE 'M' without 'B' Reports 152
Figure 130: Reference Copy Job Report Dialog Box 154
Figure 131: Continued Reference Copy Job Report Dialog Box 155
Figure 132: Reference Copy Job Report 156
Figure 133: DOS Directory Listing Dialog Box 158
Figure 134: DOS Directory Listing Report 159
Figure 135: Catalog Reports Selection Dialog Box 160
Figure 136: Print Options Setup Screen 161
Figure 137: Listing of all Columns Report 162
Figure 138: Listing of all Columns without Sub-Tables Report 163
Figure 139: Reference order (R1) Report 165
Figure 140: Preservation Request (P1) Report 167
Figure 141: Charge Out Slip (P3) Report 169
Figure 142: Preservation Request (P1) with Blanks for Output report 171
Figure 143: Annual Sample Dialog Box 172
Figure 144: Annual Sample Report Dialog Box 173
Figure 145: Annual Sample Selection Report 174
Figure 146: Annual Selection Volumne Report 176
Figure 147: Annual Sample Processing Status Report 179
Figure 148: Preferences Dialog Box/ Job Preferences Block 183
Figure 149: Preferences Dialog Box / Char Set Preferences Block 184
Figure 150: Preferences Dialog Box / Environment Preferences Block 185
Figure 151: Preferences Dialog Box / Printing Preferences Block 186
Figure 152: Print Barcodes Dialog Box 189
Figure 153: Files to be Tarred 199
Figure 154: APSTAR Startup Screen/ Menu Items 200
Figure 155: APSTAR Create Tar File Screen 201

Figure 156: Folder Selection Screen 201
Figure 157: APSTAR Information Message 202
Figure 158: APSTAR Confirmation Message 202
Figure 159: APSTAR View Reports Tab 203
Figure 160: APSTAR On-Screen Report1 204
Figure 161: APSTAR On-Screen Report2 205
Figure 162: APSTAR Rename and Save Tab 205
Figure 163: Rename TarFile Screen 206
Figure 164: APSTAR Rename File Confirmation 206
Figure 165: APSTAR Print Report Tab 207
Figure 166: Listings of All files in a TarFile Report 207
Figure 167: After Creating TarFile Report 207
Figure 168: APSTAR Create TarList Screen 208
Figure 169: TarList Save As Screen 209
Figure 170: Create TarList with Filename 209
Figure 171: Files to be Added to the TarList 210
Figure 172: TarList with Files 210
Figure 173: Delete Confirmation Message 211
Figure 174: APSTAR TarList Creation Confirmation 211
Figure 175: Information Message 211
Figure 176: Select TarList File to Open Window 212
Figure 177: Progress Message 212

LIST OF TABLES

Table 1: Acronyms and Abbreviations 7
Table 2: Tables and Sub-Tables available for View/Edit 120
Table 3: SQL Commonly Used Operators 125
Table 4: Primary Data Structure Tables 191
Table 5: Primary Data Structure Fields 192
Table 6: Secondary Data Structure Tables 196

About this Manual

The NARA APS User's Manual is designed to assist you in using the APS (Archival Preservation System) application. The manual is written primarily to assist those users who are already familiar with the archival preservation processes. It presents the functions provided by APS with an emphasis on information needed by the novice APS user.

This User's Manual details the Version 6 funtionality implemented into production to date.

What This Chapter Contains

This chapter contains the following information:

- System Overview
- References
- Authorized Use Warning
- List of Point of Contacts
- Organization of the Manual
- List of Acronyms and Abbreviations

1 GENERAL INFORMATION

This User's Manual presents operating instructions and associated background information for the Archival Preservation System, or APS. APS is custom-developed software system used by NARA to manage the technical administration of accession, preservation, and reference of permanent, electronic records within the National Archives. APS is used to copy files for preservation and reference. APS stores catalog information about the files and the file storage media in an Oracle relational database. Most of the catalog information is input from human operators. Some of it is read from the media being catalogued. Certain kinds of blocking information, for example, are read by APS from magnetic tape headers.

Background information about APS operations is presented in the following subsection and in Chapter 2. Directions for getting started on APS are presented in Chapter 4. For more information about what topics are discussed in this manual, see Section 1.5.

For a user new to APS, this manual is best used with a working copy of APS available to support self-training. Configuring an APS workstation is complex and should not be attempted by new users. It is recommended that an APS user in an APS Administrator security role be consulted to get access to a properly configured copy of APS before new users begin training with APS.

1.1 System Overview

The Archival Preservation System (APS) copies files from one volume to another, and contains a database to maintain a catalog of specifications about the volumes and files. Volumes are individual items of electronic storage media. The volumes tracked in APS are often magnetic tapes. Other types of media tracked in APS include diskettes and CDs. The database storing the file and volume information is referred to as the Catalog Database, or CDB. CDB tables are described in Chapter 22.

APS is the client program in a client/server-based system. APS, the client program, communicates with an APS server over a high-speed local area network to store information in the CDB. APS networks are arranged so that multiple APS client workstations can have access to the APS Server and the Catalog Database (CDB).

APS client version 5.17 and other APS 5 versions supported Windows 98, Windows NT, and Windows 2000. APS client version 6.0 runs under Windows XP and Windows 98 (Windows XP does not support the Pertek interfaces needed for the open-reel, 9 track drives). APS workstations can support cartridge tape, diskette and CD-RW drives. The APS server runs under a Microsoft NT 4.0 operating system and utilizes an Oracle 8i Relational Database Management System (RDBMS).

Four APS production networks are currently in operation at NARA. The four networks are used to perform processing of data at four different levels of security. The unclassified production network is the largest one. Smaller, self-contained networks are operated to support processing at the Secret, Top-Secret SCI and title13 security levels. This is graphically presented in Figure 1: APS Production Network.

Test and development personnel sometimes operate APS in a test workstation configuration. Test workstations exist as standalone machines and have Personal Oracle loaded.

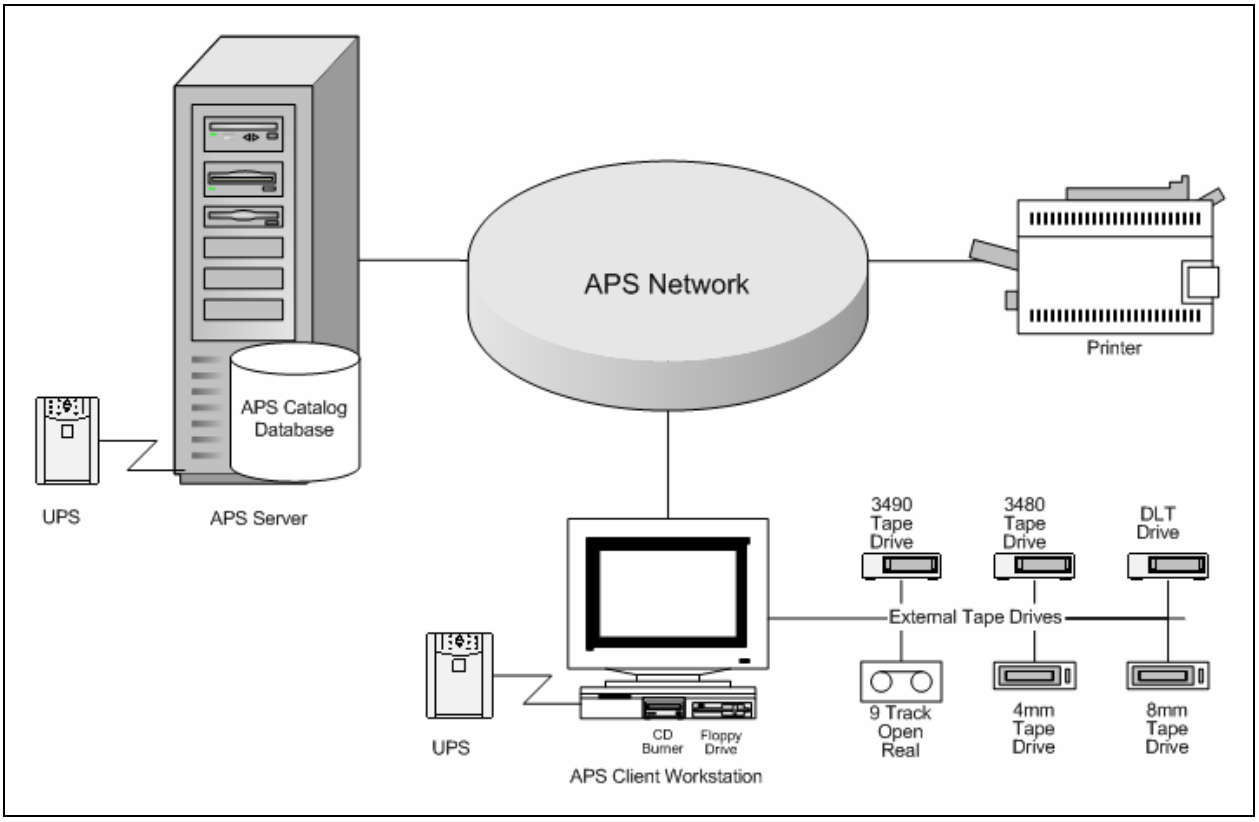


Figure 1: APS Production Network

1.2 References

1. **APS Functional Enhancement Requirements**,
   NARA SML-APS001-DC-REQ.101.R1.V03.01, December 24 2002.
2. **Performance Work Statement for Archival Preservation System (APS)**,
   Task Order Number NAMA-02-F-0043 Enclosure 2, NARA, July 2002**.**
3. **Oracle9i SQL Reference Release 2 (9.2)**,
   Part No. A96540-01, Oracle Corporation, March 2002

1.3 Authorized Use Notice

APS shall be used exclusively by authorized NARA personnel and authorized NARA contractors for the purpose of preserving and maintaining files and storage volumes for which NARA is responsible. Access to APS by unauthorized individuals is prohibited.

1.4 Points of Contact

Points of contact are provided here for NARA and for Anteon Corporation, the contractor responsible for APS Version 6.0 maintenance, upgrade and support.

1.4.1 NARA Points of Contact

1. Travice Kelsey, Acting COTR. Travice.Kelsey@nara.gov, 301-837- 1875.

1.4.2 Anteon Points of Contact

1. Kari Clavadetscher, Program Manager. KClavadetscher@Anteon.com, 703-246-0630.
2. Jaime Schmidt, Senior Programmer. JSchmidt@Anteon.com, 703-246- 0431.
3. Jesse Freeman, Software Architect. JFreeman@Anteon.com, 703-264-0628.

1.5 Organization of the Manual

The User's Manual document is presented in the following major sections:

Chapter 1	**General Information**: Gives a general overview about APS, its use and functionality.
Chapter 2	**APS Operations**: Provides information needed to understand operation of APS, describes the types of file copies and reports produced by APS, identifies security roles and associated privileges, and specifies APS workstation hardware.
Chapter 3	**Screen Layout:** Identifies functions available from the APS Main Menu and Menu Bar.
Chapter 4	**Getting Started:** Describes in detail four basic APS functions: Logging on, Changing Password, Logging off and Exiting.
Chapter 5	**Help Menu**: Describes the process used to gain access to the Help Menu.
Chapter 6	**Entering Media:** Describes the process used to enter information about storage media to be used for copy jobs.
Chapter 7	**Generating Copie**s: Describes in detail the process of using APS to generate Master, Backup, Special, Replacement and Smart Copies.
Chapter 8	**Comparing Tapes**: Describes in detail the process used to compare tapes using the two available functions, Compare Tapes and Smart Compare.
Chapter 9	**Generating Duplicate Tapes:** Describes in detail the process of generating Duplicate Tapes using the available function, Duplicate Tapes.
Chapter10	**Comparing Duplicate Tapes**: Describes the process used to Compare Duplicate tapes using the Compare Duplicate function.
Chapter 11	**Generating Directories**: Describes the process used to generate directories using the available two functions, Brief Directory and Verbose Directory.
Chapter 12	**Dump Functions**: Describes the use of Dump functions to include the two available functions, Simple Dump and Smart Dump.
Chapter 13	**Tape Merge Functions:** Describes the use of Tape Merge functions to include the two available functions, Simple Merge and Smart Merge.
Chapter 14	**Erase Files from Media:** Describes the process used to erase files from media using the available function, Erase Files.
Chapter 15	**Putting APS in Reference Copy Mode:** Describes the method and reason for putting APS in Reference Copy Mode.
Chapter 16	**Managing the Database**: Describes the functions available to manage the database, to include the use of View/Edit, View History, Delete Tagged Files, Import and Export functions.
Chapter 17	**Viewing and Storing Image Metadata:** Describes the process used to view and store information about images using the function, Image Metadata.
Chapter 18	**Managing Users:** Describes the functions available to administrators to manage users, to include the Add Users and Delete Users functions.

Chapter 19 **Generating Reports:** Lists the available reports and describes the process used to generate all available reports. This Chapter will be divided into three subsections to cover reports by their location on the Main Menu. Included in Chapter are reports under the Report Menu Item, Catalog Reports and System generated reports.

Chapter 20 **APS Configuration:** Describes the process used by an experienced user to use the Options function to configure APS, and then covers the use of the Save and Reload Configuration functions.

Chapter 21 **Print Barcodes:** Describes how to print barcodes for media labels.

Chapter 22 **Catalog Database (CDB) Description:** Describes APS database tables.

Chapter 23 **Creating TAR Files:** Gives specific instructions on creating TAR (Tape Archive) files.

1.6 Acronyms and Abbreviations

Table 1: Acronyms and Abbreviations lists the Acronyms and Abbreviations used throughout this document.

APS	Archival Preservation System
ASCII	American National Standard Code for Information Interchange
CDB	Catalog Database
DBA	Database Administrator
EBCDIC	Extended Binary Coded Decimal Interchange Code
NARA	National Archives and Records Administration
NWME	Electronic and Special Media Records Services Division
ODBC	Open Database Connectivity
RDBMS	Relational Database Management System
SQL	Structured Query Language
TAR	Tape Archive
USM	User's Manual

Table 1: Acronyms and Abbreviations

What This Chapter Contains

This chapter contains the following information:

- Types of Copies Produced Using APS
- Reports Produced Using APS
- Initial Copy Process Description
- Media Storage Hardware Used by APS
- APS Workstation Hardware

2 APS OPERATIONS

APS is used to copy files, store information about files, display stored information, and produce reports. This section provides information required by a new user to understand APS operations. The information is provided in the following subsections:

- **Copying Processes and Types of Copies Produced Using APS.** This section describes the types of copies produced by APS. This includes Master Copies and Backup Copies, along with all other types of copies.
- **Reports Produced Using APS.** This section lists all of the reports produced by APS and states where in the User's Manual to look for directions to produce those reports.
- **Initial Copy Process Description.** This section describes the steps used to copy Temporary files to Master and Backup Copies and to approve the copies.
- **APS User Access Levels.** This section describes the different security roles assigned to APS users and the privileges associated with each.
- **Media Storage Hardware Used by APS.** This section describes the tape drives and other media control devices connected to APS.
- **APS Workstation Hardware.** This section describes APS Workstation hardware. This includes the interface hardware used to support the media storage devices.

In addition to this information, presented in the subsections below, an APS user will require some knowledge of Sequential Query Language, SQL, to locate and display select items of CDB information. Users unfamiliar with SQL should consult Reference [3] of Section 1.2 for comprehensive documentation.

2.1 Copying Processes and Types of Copies Produced Using APS

This section describes the types of file copies produced by APS. Production of file copies is one of the most common tasks performed using APS. This section describes the types of file copies available but not how to produce them. Instructions for making file copies are presented in Chapter 7, GENERATING COPIES.

File copy types produced by APS are as follows:

- **Master Copy:** This is the primary copy used to preserve information in NWME. The Master copy is usually produced by copying information from a Temporary Copy provided by a U.S. Government agency or from an earlier master or backup copy. Master Copies are tracked in the database as type 'M'.

- **Backup Copy:** This is a copy of the Master copy, to be used if there is some failure of the Master copy or if the Master copy is temporarily unavailable. Backup Copies are tracked in the database as type 'B'.
- **Reference Copy:** A Reference copy is one produced to provide a researcher (or customer) with a copy of records that the researcher ordered. Reference Copies are produced using APS but are tracked in the Reference Timing table of the CDB.
- **Replacement Master:** When a copy is produced from an earlier Master copy or Backup copy, it is referred to as Replacement Master. It is a copy of type Master that is the same as a Master copy. This is a copy of the information on the Master copy. A Replacement Master is produced when the Master copy is ten years old, found to be defective or cannot be found. The Replacement Master becomes the Master copy after the copy activity has been verified as successful. Replacement Master Copies are tracked in the database as type 'M', replacing the previous 'M' copy.
- **Replacement Backup:** When a copy is produced from an earlier Master copy or Backup copy, it is referred to as Replacement Backup. It is a copy of type Backup that is the same as a Backup copy. This is a copy of the information on the Master or Backup copy. The Replacement Backup is produced at same time as the Replacement Master. The Replacement Backup becomes the Backup copy after the copy activity has been verified as successful. Replacement Backup Copies are tracked in the database as type 'B', replacing the previous 'B' copy.
- **Replacement Copy for the Master:** This is the classification assigned to the old Master copy after a Replacement Master has been produced and verified. After a Master copy is changed to a Replacement copy for the Master, it is tracked in the database as type 'D'.
- **Replacement Copy for the Backup:** This is the classification assigned to the old Backup copy after a Replacement Backup has been produced and verified. After a Backup copy is changed to a Replacement copy for the Backup, it is tracked in the database as type 'E'.
- **Duplicate Copy:** This is an exact copy of any of the other APS copies. Duplicate copies are made to provide NWME staff or contractors with a working copy rather than the original copy. Duplicate copies are sometimes made to help another Federal government agency recover data from media that it can no longer read. Duplicate Copies are not tracked in the APS database.
- **Special Copy:** This is a copy of any of the other APS copies. It may not be an exact copy. It may be blocked differently. The files on it may be in a different format from the files on the source APS copy. Special Copies are tracked in the database as type 'S'.

- **Temporary Copy:** This is a media item used as a data source. It is generally originated by an organization outside of NWME and used to convey information to be preserved by NWME. It is tracked in APS until the information has been verified to be stored to an appropriate Master copy. It is then returned to the organization that produced it, usually a U.S. Government agency. If the agency does not want it returned, it is destroyed. Temporary volumes also include working copies produced by NWME for a specific reason such as those listed for Duplicate Copies above.

  Temporary Copies are more of an input to APS than a product of APS. They are an APS product insofar as they cannot be returned to the owning organization – or destroyed - until the appropriate APS copy activities have been performed and verified.

  Temporary Copies are tracked in the database as type 'T'. Database records pertaining to Temporary Copies are tagged for deletion when the Master Copies produced using those Temporary Copies are approved by a Reviewer.

- **Duplicate Temporary:** This is a duplicate of a temporary copy. Duplicate Temporary copies are used for similar purposes as Temporary copies. Duplicate Temporary copies are tracked in the APS database as type 'F'.

- **Smart Copy:** This is a process used to copy any tape or tape image, made without adding any information to the CDB. It differs from a Duplicate Copy in that the output tape can be in a different format than the source tape. Smart Copies are not tracked in the APS database.

- **Merge Copy:** This is a combination of files taken from multiple tape or tape images as directed by the operator. The merge utility can be used to simultaneously open up to four input units and to selectively read from each of them while copying the blocks to an output unit. Merge Copies are not tracked in the APS database.

2.2 Reports Produced Using APS

This section describes the kinds of reports produced by APS. APS Reports are used to confirm that APS activities have been fully executed, or to provide information about a file or group of files in a hard copy or electronic format.

This section describes the kinds of reports available but not how to produce them. Instructions for making reports are presented in several sections of this User's Manual, with examples. User's Manual sections presenting instructions for producing each report will be identified with the report description.

Reports produced by APS are as follows[1]:

- **Copy Report:** Documents that an APS copy was produced. Copy reports are produced when a copy is produced. See Section 7 for instructions for executing copy jobs. See Section 7.7 for an example of a copy report.
- **Compare Report:** Documents that an APS copy was verified to contain information equivalent to what was stored on the information source. Compare reports can be produced by executing a Compare job, described in Section 8.1 with an example. Compare reports are also produced automatically when copy jobs are performed. Described in Section 7.1.
- **Catalog Report, Charge Out Slip (P3):** Presents information on volumes to be temporarily removed from assigned location, with blanks for user to fill in. Described in Section 19.2.
- **Catalog Report, Listing of All Columns:** Presents the name and value for every field in a single table row, with the same information for related rows of other CDB tables. Described in Section 19.2.
- **Catalog Report, Listing of All Columns without Sub-Tables:** Presents the name and value for every field in a single table row. Described in Section 19.2.
- **Catalog Report, Preservation Request (P1):** Presents information on source and output files processed in a copy job. Described in Section 19.2.
- **Catalog Report, Preservation Request (P1) with Blanks:** Presents information on source files processed for a copy job. Blank fields are presented for output file information, to be populated by the user. Described in Section 19.2.
- **Catalog Report, Reference order (R1):** Presents information on files to be copied to create a Reference copy, with blanks for user to fill in for the Reference Copy file. Described in Section 19.2.
- **DOS Directory Listing:** Lists files in a user-selected DOS directory. Described in Section 19.1.6.

[1] The reports are listed alphabetically here. This is different from the order in which information about the reports is presented in later sections of the document.

- **File Type Master without Backup, FTYPE M w/o B Report:** Lists files in the catalog database of file type 'Master' without corresponding file of type 'Backup' and visa-versa. Described in Section 19.1.4.
- **Preservation Request P1 with Blank:** This report is used to generate a Preservation Request (P1) with empty fields. Described in Section 19.2.6.
- **Line Report:** Describes the contents of the database in a compact form, one or more lines for each file tracked. User can control the information content using a configuration file. Procedures for generating the Line Report are presented in Section 19.1.1.
- **Merge Report:** Documents that a merge copy was produced and identifies the blocks and records stored on the merged copy. This is described in Chapter 13 with an example.
- **Reference Copy Report:** Documents the amount of computer time spent to produce a Reference copy. The activities required to perform Reference Copy timing are described in Chapter 15. The Reference Copy report is described in Section 19.1.5.
- **Status Summary Report, STATSUM:** Lists a grand total and the subtotal number of volumes, files, blocks and logical records in the catalog database grouped by type and status. Described in Section 19.1.3.
- **Table Dump Report:** Lists the first and last rows of any table in the catalog database. Described in Section 19.1.2.
- **Tape Directory:** Lists the files stored on a tape or tape image file with information about file sizes and block locations. There are two options for directory output, “Brief” and “Verbose”. The “Verbose” option prints all standard ANSI and IBM labels on the tape, in addition to the file information. The tape directory is also referred to as the tape map. Described in Chapter 11.
- **Tape Dump:** Presents the contents of a selected record or block of data from a tape or tape image. The “smart” dump procedure reads the tape header and determines record delimiters, so that it can present the contents of selected records in addition to or instead of selected blocks. The “simple” dump procedure operates in block mode only. The simple dump procedure is not affected by information in the tape header. Both procedures are described in Chapter 12.

2.3 Initial Copy Process Description

This section describes the APS-related portions of the NWME Initial Copy process. This is the process used to copy Temporary files to Master and Backup Copies and approve the copies. The process is depicted graphically in Figure 2: APS-Related View of NWME Initial Copy Process. The process steps are as shown below:

1. A U.S. Government agency or another entity sends NARA physical media containing electronic records that have been determined to have continuing value and are to be preserved by NARA. In some cases, the agency sends the records by FTP and NWME copies them to a physical media. The physical media containing the electronic records becomes NWME's Temporary Copy.
2. NWME Archival Services requests Technical Services to make preservation copies of the records.
3. An APS Operator produces a Master copy from the Temporary Copy. The APS Operator compares files on the two copies. Copy and Compare Reports are reviewed and retained.
4. An APS Operator produces a Backup copy from the Master copy. The APS Operator compares the two copies. Copy and Compare Reports are reviewed and retained.
5. An APS Operator maps Master and Backup Copies against the CDB to confirm agreement between database, physical media and physical media contents.
6. An APS Operator prints a dump of the first 5 records and the last block of each file on Master copy, or some other sample as requested.
7. An APS Reviewer checks the job reports against the CDB for completeness and correctness.
8. An APS Reviewer checks job reports and CDB against the physical media for completeness and correctness. This may include mapping the Master or Backup Copies a second time, or dumping volume contents.
9. An APS Senior Reviewer approves (or disapproves) the Initial Copy in APS.
10. If the Senior Reviewer approves the initial copy, APS automatically tags database records pertaining to the Temporary Copy for deletion.
11. An APS Administrator or Senior Reviewer deletes tagged records. This completes the Initial Copy process.

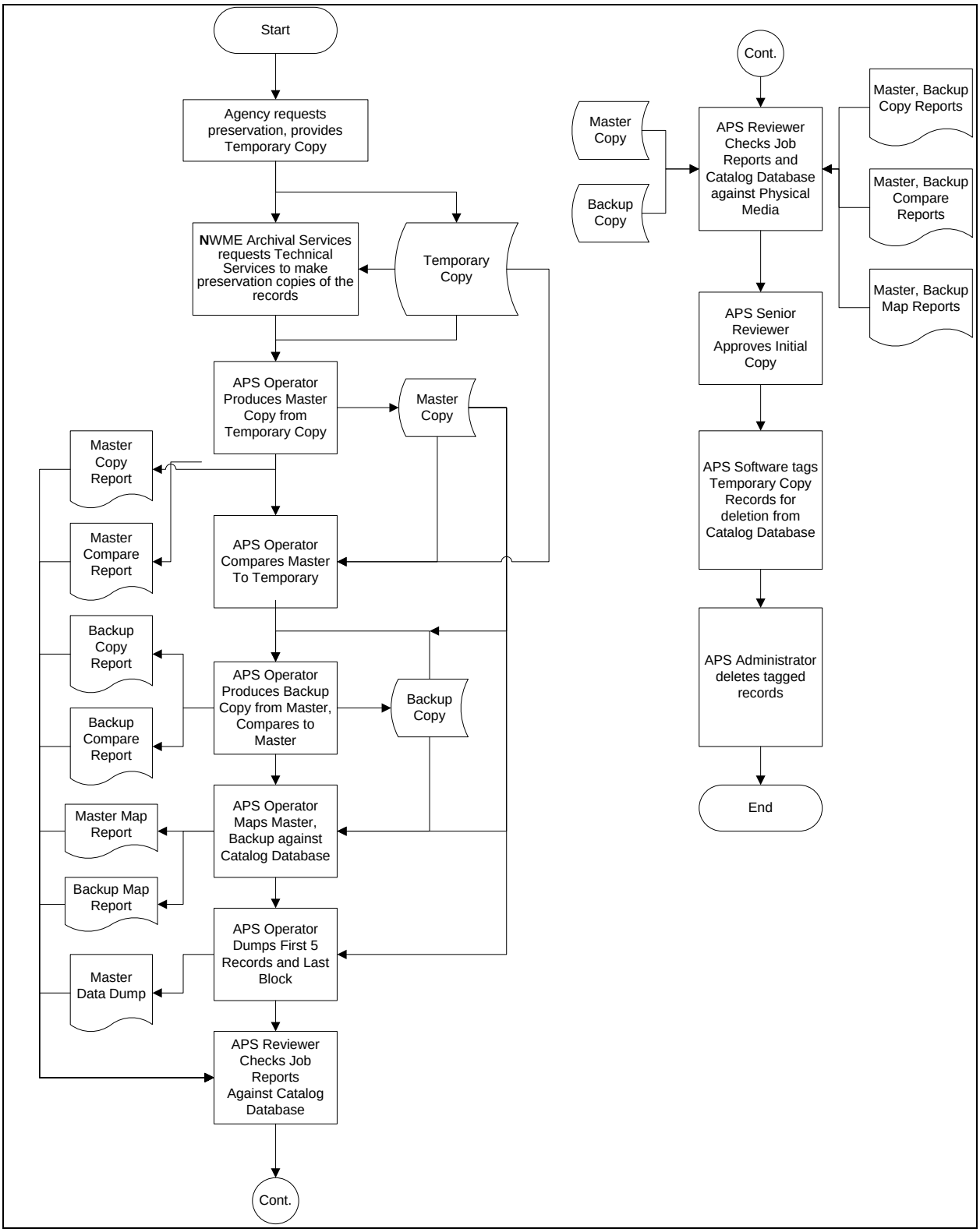


Figure 2: APS-Related View of NWME Initial Copy Process

2.4 APS User Access Levels

This section presents APS user access levels, or security roles. The APS system supports users with five different security roles, with differing levels of access to the APS database. These roles, in increasing levels of access privileges, are: User, Operator, Reviewer, Senior Reviewer, and Administrator. These roles are hierarchal, as shown graphically in Figure 3: APS Role Hierarchy. A user with a higher access level has all the privileges of lower levels. A user with a Reviewer role, for example, has all the privileges of a user in an Operator role, in addition to other privileges.

New APS users will probably begin their operations on APS in a User, Operator or Reviewer role. More experienced users may operate in Senior Reviewer or Administrator roles. The roles are graphically depicted in Figure 3: APS Role Hierarchy. The privileges associated with each role are presented below:

- **User:** Users are typically archivists authorized to use APS for tape duplication and examination. Users have no privileges other than to log on to APS and perform duplication, directory and dump operations. They are not authorized to modify the database. Any operations they perform must be with options that do not require database interaction.
- **Operator:** Operators are those users that normally run copy jobs on the APS system. They can view, edit and add to all tables except the users table. They cannot delete entries or flag entries for deletion from any table.
- **Reviewer:** Reviewers are users that have all privileges of Operators and can also tag records for deletion. They cannot delete tagged records. If it is necessary to delete an entry, such as when a reviewer disapproves a copy job, the reviewer must flag the entry for deletion by changing the preservation status (pstat, see Chapter 22) in the file master table. At a later point a senior reviewer or an administrator can remove the flagged entry from the database.
- **Senior Reviewer:** Senior Reviewers are users that have all privileges of Reviewers but are also able to approve jobs, and delete records that have been tagged for deletion. Senior reviewers cannot add or delete user's accounts; they have read-only access to the historical database.
- **Administrator:** Administrators have all privileges of Senior Reviewers and also have complete access to the database. They may view, add to, delete from, or modify any of the tables in the database. They can add, modify or delete other user's accounts on the APS system. They have read and write access to the historical database.

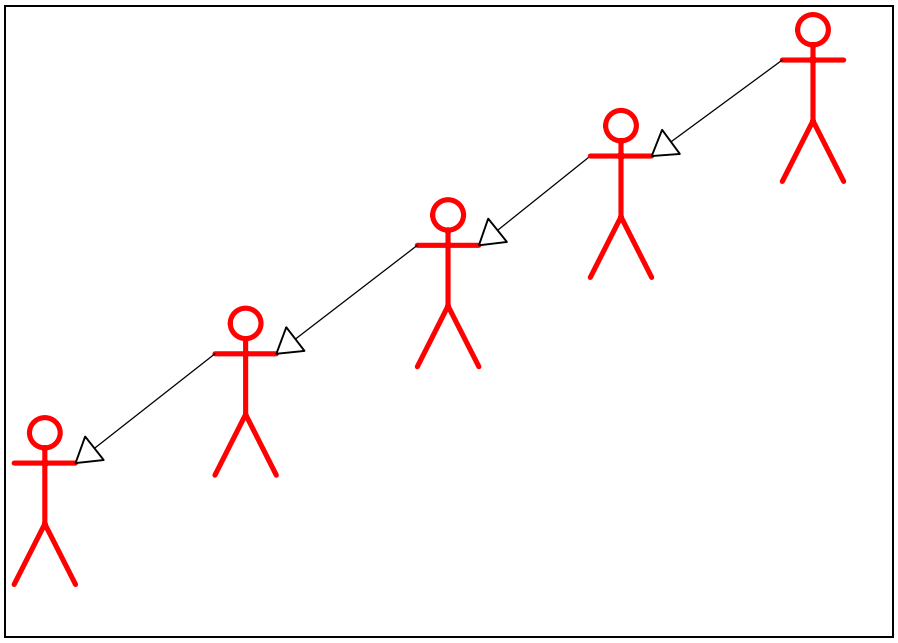


Figure 3: APS Role Hierarchy

2.5 Media Storage Hardware Used by APS

This section describes the tape drives and other media control devices connected to APS. Please note that not all APS workstations will support all of the drives. The following media devices can be connected to APS client workstations:

- **9 track tape drives.** These were the first standard for data backup on computer systems. They recorded data in nine parallel tracks using a head assembly with nine separate write heads, nine read heads and one erase bar. Later units had two sets of read heads in the assembly so they can read in reverse, as well as in forward motion. The use 1/2" open reel tape in varying lengths, varying density and varying recording modes;
- **3480 / 3490 cartridge tape drives.** These are available in a variety of configurations to accommodate a range of customer options. Both desktop and rack mount models can be configured with the following features and functions:
    - Automated Cartridge Loader (ACL)—APS 6.0 does not provide automated loading and unloading of tapes in ACL equipment. APS 6.1 will support these functions. Provides the sequential or random processing of up to ten cartridges to support the unattended backup of a maximum of 24GB of data;
    - Flush-Mount Automated Cartridge Loader (FACL)—APS 6.0 does not provide automated loading and unloading of tapes in FACL equipment. APS 6.1 will support these functions for models. Supports sequential or random processing of seven cartridges (16.8GB maximum), with the advantage of an automatic cleaning function;

«extends

- Interface Personality Module (IPM)—This convenient feature enables the M2488 to support a variety of SCSI interfaces that can be easily configured to address current and future requirements; and
- Seismic Data Feature (SDF) -- this feature facilitates a Read-After-Write verification process of data written to tape. It is ideal for seismic and other applications where it is critical to ensure recorded data is not corrupted.

- **DLT tape drives.** These drives achieve sustained native transfer rates of up 21.6 GB per hour and up to 43.2 GB per hour with data compression. Four channel read/write heads provide state of the art performance
- **8 mm tape drives.** Tape capacity of these drives is up to 60GB per cartridge (150GB with 2.5:1 compression). Improved data transfer rate up to 12.0MB/sec uncompressed and up to 30.0GB/sec compressed, depending on the model. Capability to read earlier 8 mm tape formats (model dependent). Differential fast/wide SCSI-2 attachment (68-pin) that will connect to differential fast/wide or fast/narrow adapters (LVD/SE on the 7208-345). Three models: 341 for the RS/6000, 342 for the AS/400, and the 345 for RS6000. Low-cost, high-capacity backup solution;
- **4 mm tape drives.** These drives have a data storage capacity of 4GB to 20GB (8GB to 40GB with 2:1 data compression). Data transfer rate from 400KB to 3.0MB/sec (800KB to 6.0MB/sec with compression). Read and write in DDS-2, DDS-3 and DDS-4 tape cartridges providing for ease of migration and interchange. Non-data grade media rejection which will not permit writing on audio-grade media. Read after write data verification which verification that ensures that data is written accurately. File access average search speed of 40 seconds on any part of a DDS-4 tape;
- **Disk file drives.** APS supports two disk file units. These are not physical units but are logically treated in a similar manner to the physical tape units. A disk file unit is simply a collection of PC files. Disk file units can include files located in multiple directories and on multiple drives. Thus, a disk file can be used to treat a diskette, CD-ROM or CD-RW as a tape volume. When a disk file is specified as the input unit, APS displays the Select files dialog box to prompt the user for which files to copy. When a disk file unit is used as an output unit, discrete files with user specified filenames (file id) are written to the directory. Since diskettes are random-access storage devices, files are not stored sequentially and labeled files cannot be written to disk file units. In addition, since PC files do not contain physical blocks, the concept of blocksize is not applicable to disk file units and the blocksize can be set to any value. For fixed length records, the block size for disk files should be set to a multiple of the record length. APS will automatically convert invalid Windows filenames to valid names. When APS performs the conversion it will either display a message on the screen or add an entry to the rename file, depending on the current setting in the Copy Preferences dialog box;
- **Tape image files.** APS supports four 'tape-image' file units. Like the disk file units described above, these are logical, not physical tape units. A 'tape-image' unit is a single PC file containing an 'image' of a physical tape. Tape-images contain data stored in blocks and can contain several logical files separated by 'tape-marks'. Thus, unlike disk file units, 'tape images' are sequential, can contain labeled files, and are treated like physical tape units in all aspects;
- **CD Burners**: Around since the late 1980's, this type of optical drive can be written to and read from. When data is written to the CD drive, physical marks are made on the media surface by a low-powered laser**.**
- **Floppy Diskette Drives—**Around since the early 1970's, this external storage device has was the first portable storage device that was included with the personal computers.

- **DVD Drives—**Around since 1996, this type of optical device can be written to and read from. When data is written to the DVD drive, physical marks are made on the media surface by a low-powered laser. At first glance, a DVD disc can easily be mistaken for a CD: both are plastic discs 120mm in diameter and 1.2mm thick and both rely on lasers to read data stored in pits in a spiral track. The DVD's seven-fold increase in data capacity over the CD has been largely achieved by tightening up the tolerances throughout the production system.

2.6 APS Workstation Hardware

This section describes APS Workstation hardware. This includes brief descriptions of interface hardware installed on APS workstations. The interface hardware is used to support the media storage devices described in the preceding section.

APS Workstations are Intel architecture personal computers consistent with Windows XP operating system hardware requirements. All APS workstations have Ethernet controller cards operating at 10 or 100 Mbps (megabits per second), using RJ45 or coaxial Ethernet connectors. APS workstations can include diskette drives to write floppy disks or CD-RW drives to write CDs.

Interface hardware installed on APS workstations includes the following:

- **Overland TXi-16 controller card**. Used for Pertek 9-track.
- **Adaptec or Future Domain ASPI compliant SCSI controller card.** Used to control SCSI-based tape drives.
- **3480 cartridge tape drive controllers.** Used to control 3480 cartridge tape drives. These have a SCSI-2 physical interface.

What This Chapter Contains

This chapter contains the following information:

- Layout of APS Main Menu
- Layout of APS Menu Bar

3 SCREEN LAYOUT

This section presents the APS screen with all of the APS Menu Items. Some of these commands are available from the APS Menu Bar. The APS Menu Bar is described after the APS Menu. Subsequent sections of this User's Manual describe how to use APS to generate copies, to generate reports and to perform other tasks. These sections will be referred to in later sections when describing APS menu selections and toolbar buttons.

3.1 APS Menu

The image below shows all the available APS menu and sub menu items. Each item use and functionality will be discussed in details later in this manual. A screenshot is presented in Figure 4: APS Menu.

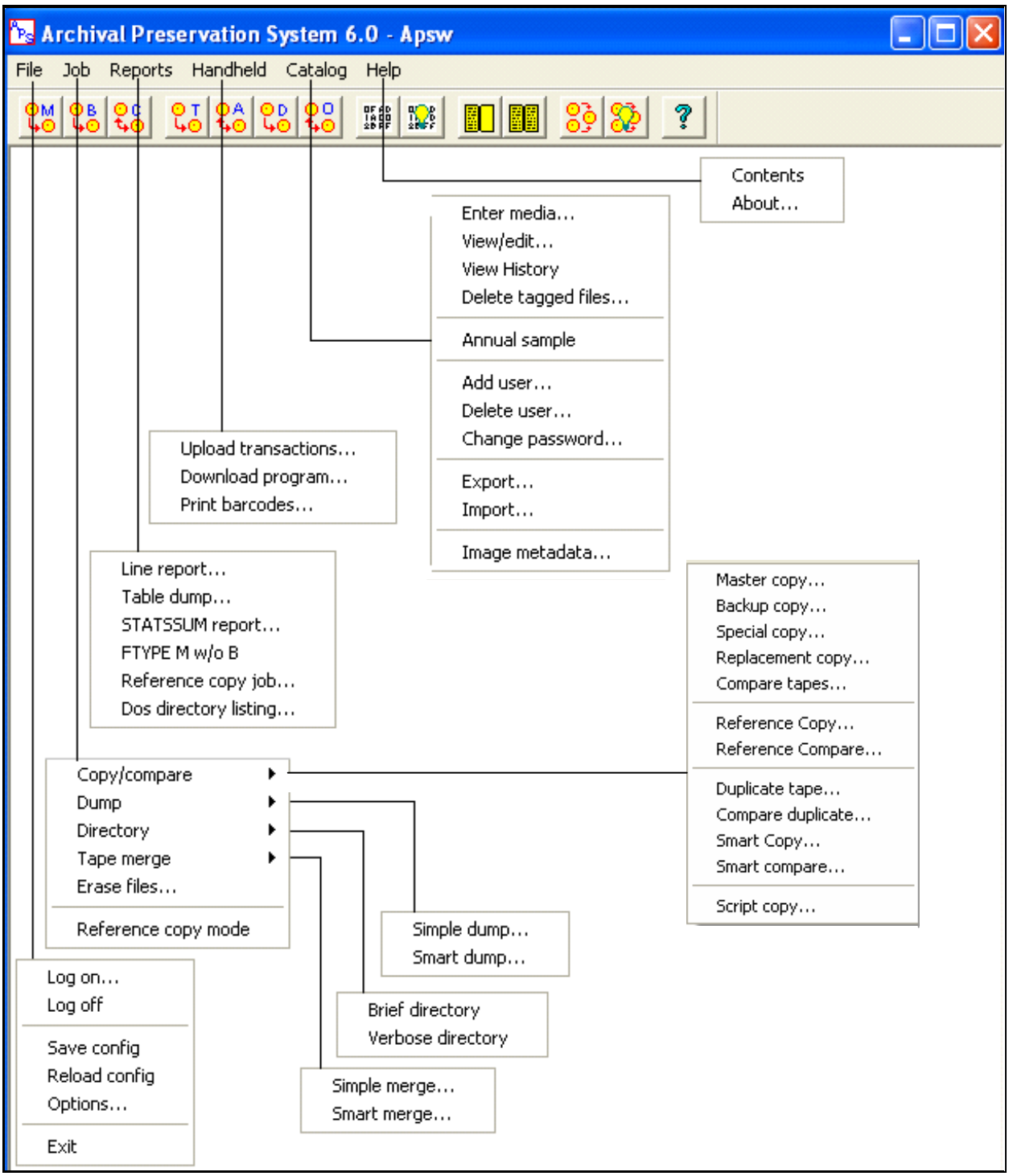


Figure 4: APS Menu

3.2 APS Menu Bar

APS Menu Bar contains items available from the Job Menu, these items are placed as a Menu Bar items for easy access to repeatable functions. The Menu items are listed in Figure 5: APS Menu Bar.

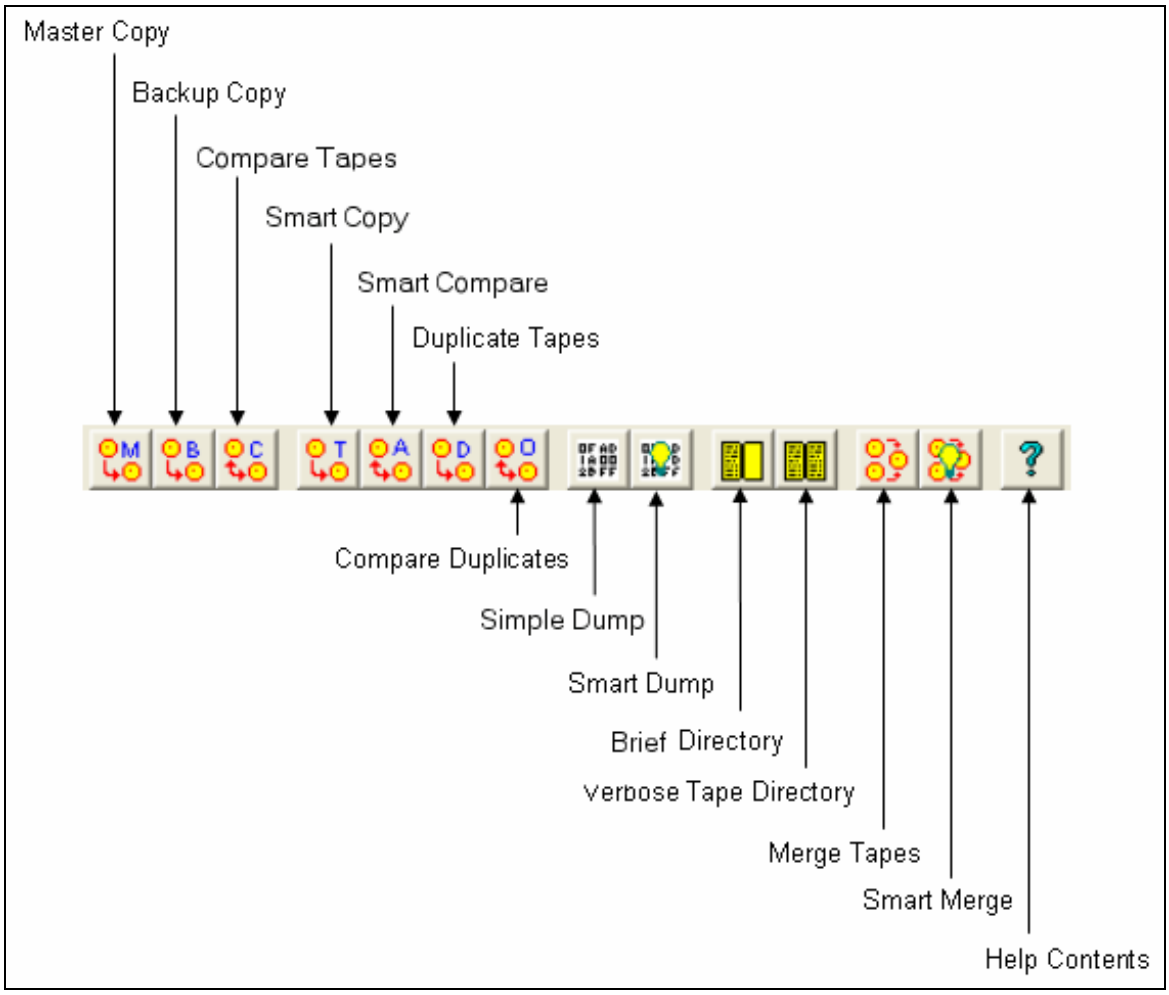


Figure 5: APS Menu Bar

What This Chapter Contains

This chapter contains the following information:

- Logging On
- Changing Password
- Logging Off
- Exiting APS

4 GETTING STARTED

This section describes basic APS functions. Four functions will be discussed in details:

1. Logging On to APS;
2. Changing APS User Password;
3. Logging Off of APS; and
4. Exiting APS.

4.1 Logging On

The user must log on to APS before database related functions (e.g. Master copy) are enabled. This is accomplished by choosing *'Log on'* from the APS File menu, as described in Section 3.1. This will activate the APS Log on screen. Simply key in a valid user name and password and press Ok. APS will now be operating in online mode and all functions will be enabled consistent with your security role, as described in Section 2.4. Users with administrator status will be allowed to perform all functions, while those with other logon privileges will be unable to accomplish some tasks (i.e. to add a user to the system, or to delete an entry from the database). The Oracle server must be running in order for the logon process to succeed. For this version of APS, usernames must be three characters or less, alpha or alpha-numeric, but not just numeric. The Logon screen is presented in Figure 6: APS Logon Screen.

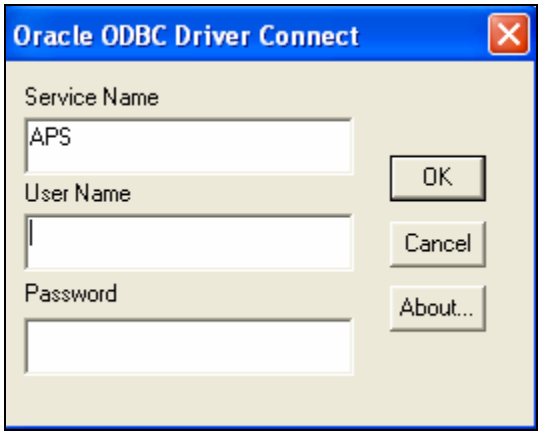


Figure 6: APS Logon Screen

NOTE: If the "Prompt for ODBC when logging on" option is enabled, the Select Data Source screen will be presented prior to the APS Logon screen. The Select Data Source screen is shown in Figure 7: Data Source Selection Screen. Under the *Machine Data Source* Tab select the APS data source. Usually this will be named "APS", but contact the APS systems administrator for assistance if you don't know which

of the listed data sources to use. Control of the "Prompt for ODBC when logging on" option is explained in Section 20.3, Environment Preferences.

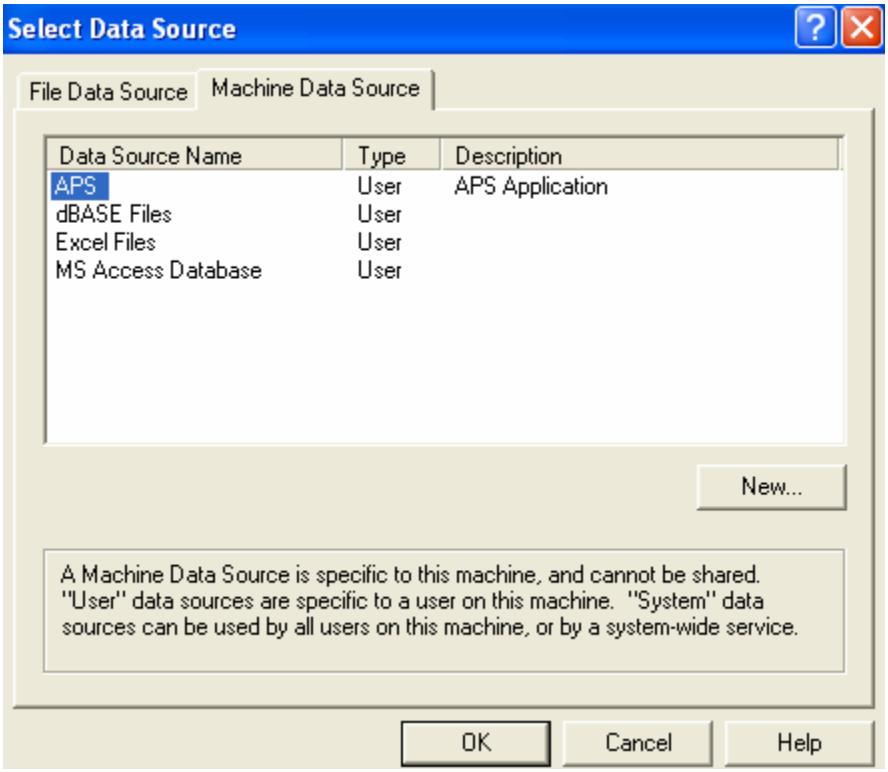


Figure 7: Data Source Selection Screen

4.2 Changing APS User Password

To change your password, select *'Change password* 'from the Catalog menu, as described in Section 3.1. APS will display a dialog box giving you the option to select your own user name from a drop down box. Select your user name and enter a new password twice (it will not be echoed on the screen). This screen is presented in Figure 8: APS Change Password Screen. Correctly entering the new password twice and confirming the operation will cause the new password to go into effect. For this version of APS, passwords must be three characters or less, alpha or alpha-numeric, but not just numeric.

Note that as a user with Operator/ Reviewer/ Senior Reviewer privilege, you'll be able to change your own password only. Administrators can change their own password and everyone else's. Users with "User" privilege are not allowed to change their own password, should the need arise; they will need to contact the Administrator and request their password to be changed.

Figure 8: APS Change Password Screen

4.3 Logging Off

To Log off, simply select *'Log off'* from the File menu, as described in Section 3.1. Note you will be logged off and you will not be prompted to confirm selection.

4.4 Exiting APS

To Exit APS, select *'Exit'* from the File menu, as described in Section 3.1. You will be prompted to confirm your selection, once 'Yes' is clicked, APS window will close. This screen is presented in Figure 9: APS Exit Confirmation Screen.

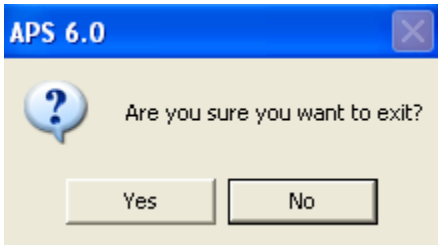


Figure 9: APS Exit Confirmation Screen

What This Chapter Contains

- This chapter contains a detailed description on How to Access and Use the Help Menu.

5 HELP MENU

This section will cover the use of the help menu. Access to the help menu from the main menu and from any other screen will be discussed.

Selecting *Help* → *Contents* from the Main Menu will display the generic Help Menu, as described in Section 3.1. Using the *Contents, Index and Search* Tabs gives the user several options to retrieve information about APS in general or the use of a specific function. Alternatively the Help Menu can be accessed by pressing the Help Contents button  on the APS Menu Bar. This screen is presented in Figure 10: APS Help Menu.

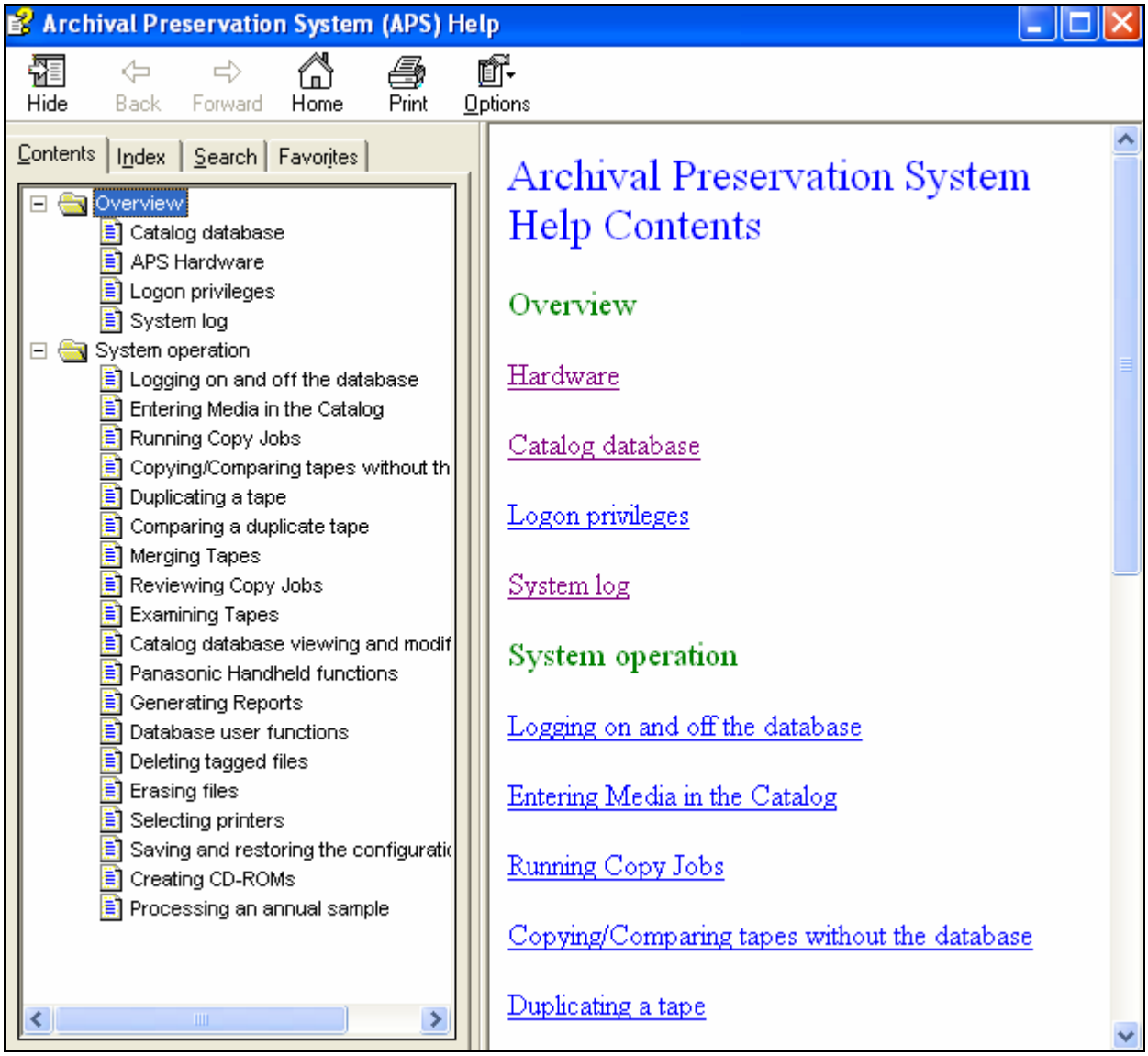


Figure 10: APS Help Menu

Topics used on several occasions from the *Index* or *Search* Tabs can be added to the Favorite block of the Help Menu by clicking on the *Favorite* Tab, and clicking the '*ADD'* button. Similarly, topics can be removed from the Favorites block by highlighting the topic and clicking the '*Remove'* button. The block is presented in Figure 11: APS Help Menu/ Favorite Block.

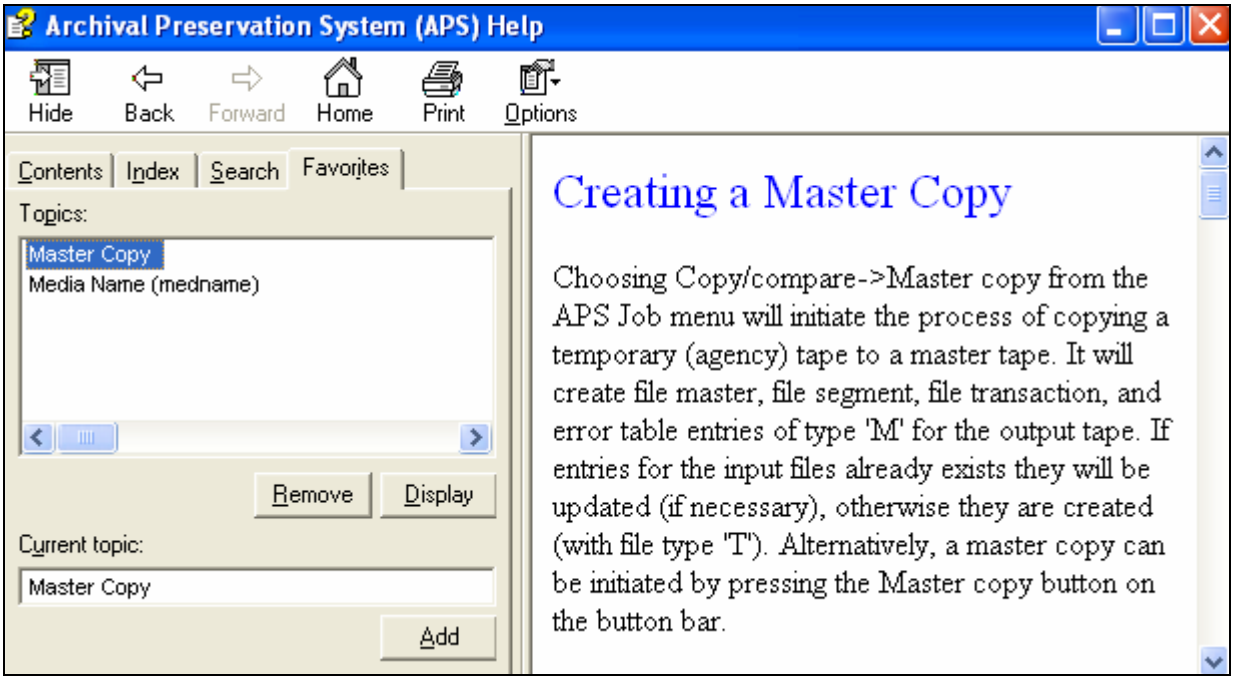


Figure 11: APS Help Menu/ Favorite Block

Also, the APS Help Menu can be used in a context sensitive manner. While a screen is displayed and the Help button is available, clicking on the Help button will display topics related to the current screen. For example, if the Open Unit Dialog Box is displayed, clicking the Help button on the Dialog Box will display Help related to the Open Unit Dialog Box. An example of a Help button on a dialog box is presented in Figure 12: Open Unit Dialog Box. An example of a Help screen for the Open Unit dialog box is presented in Figure 13: Open Unit Dialog Box Help Topic.

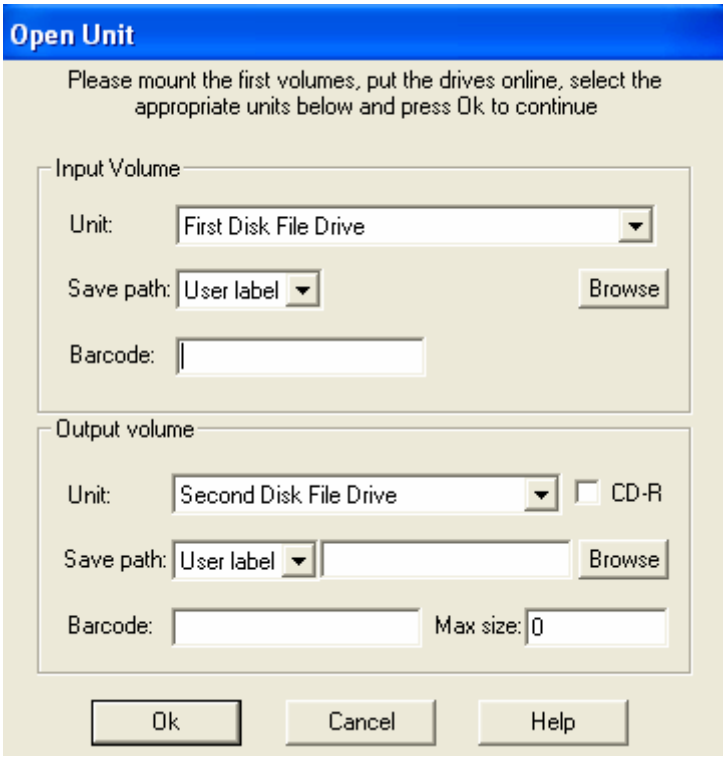


Figure 12: Open Unit Dialog Box

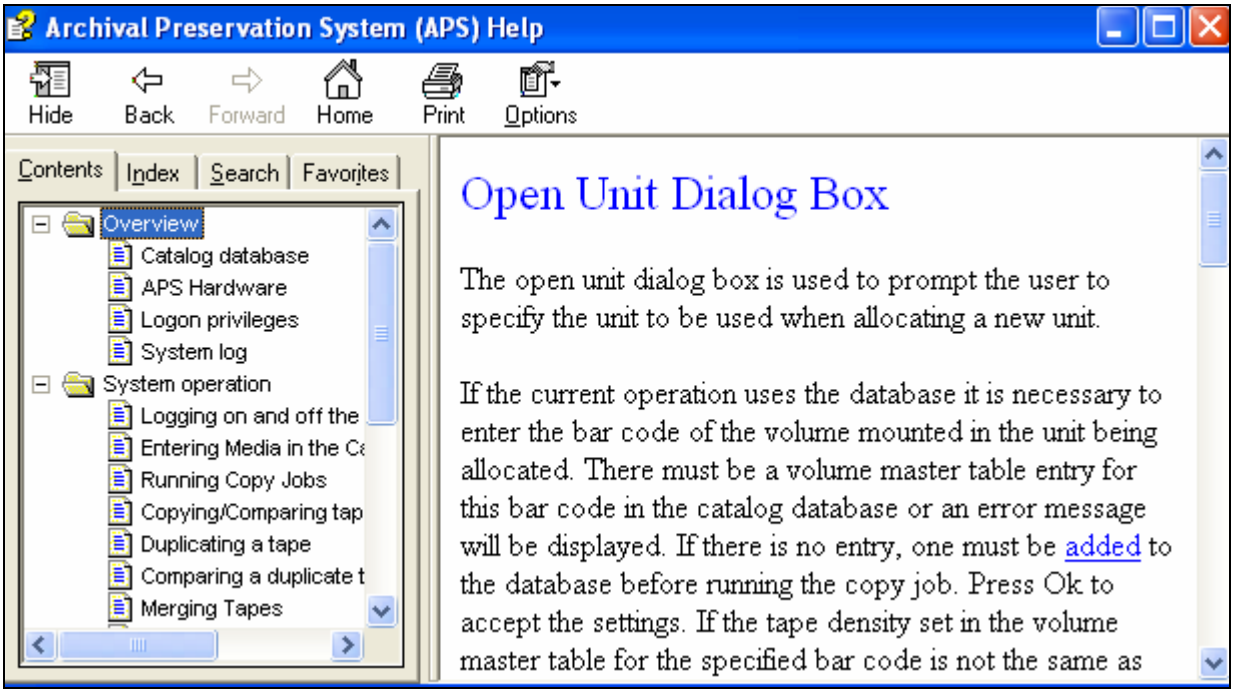


Figure 13: Open Unit Dialog Box Help Topic

What This Chapter Contains

This chapter contains a detailed description of the Process of Entering Media in APS.

6 ENTERING MEDIA

This section describes how to add information about storage volumes such as tapes or CD-RWs into the volume master table. A volume master table entry consists of a volume bar code and other information about the storage media.

Before a copy job can be run, all input and output volumes must have volume master table entries in the database. The bar codes are used to identify the volumes used in the copy process. The bar code is used by APS to track files written to the volume and compute the amount of space left on it for additional file storage.

Both agency tapes and output tapes are added to the volume master table in an identical manner. Choose *Enter media* from the APS Catalog Menu, described in Section 3.1, to display the Enter Media in Catalog dialog box. The box is presented in Figure 14: Enter Media in Catalog Dialog Box.

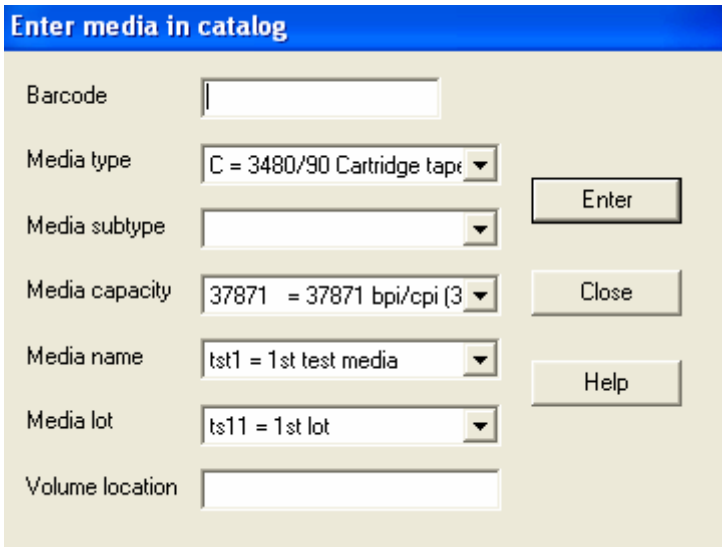


Figure 14: Enter Media in Catalog Dialog Box

The system requires you to input the volume barcode (barcodes are generally obtained from a roll of papers that have unique numbers that can be taped to the media. If you are not sure where to get barcodes from, you should ask your supervisor. After a barcode is assigned to a media thru a process, it is taped to the media to add a physical association to the database assignment), media type, media sub-type, media capacity, media name, and media lot. Barcode value can be up to 6 characters, and if you attempt to leave it blank you will get a message informing you that value cannot be blank. The message is shows in Figure 15: Barcode Required Information Message.

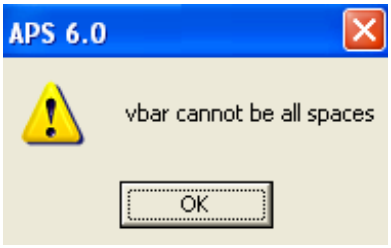


Figure 15: Barcode Required Information Message

Click Ok on the message box and enter a value for barcode. Use "AGNC" as media name and media lot for agency tapes. Default values are filled in for some of the fields as shown in the figure above, but they can be modified to any valid entry. Press the Enter button (or press the Enter key on the keyboard) to accept the entry or the Cancel button (or press the Esc key on the keyboard) to end. After a tape has been entered in the database the Enter Media in Catalog dialog box reappears with the previous tape's values (as default values) to facilitate the entry of multiple tapes with similar characteristics. The system will not allow duplicate bar codes in the database, and attempting to enter a bar code that already exists will produce an error. The Barcode field is case sensitive, that is barcode value "test1" is different from "TEST1". The message is shown in Figure 16: Duplicate Barcode Error Message.

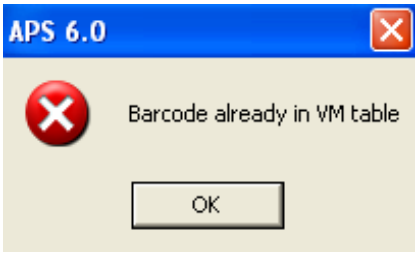


Figure 16: Duplicate Barcode Error Message

If you enter an invalid value for Volume Location, you will get an information message advising you about valid locations for different media types. Click ok on the message box and enter a valid value. The message is shown in Figure 17: Volume Location Information Message.

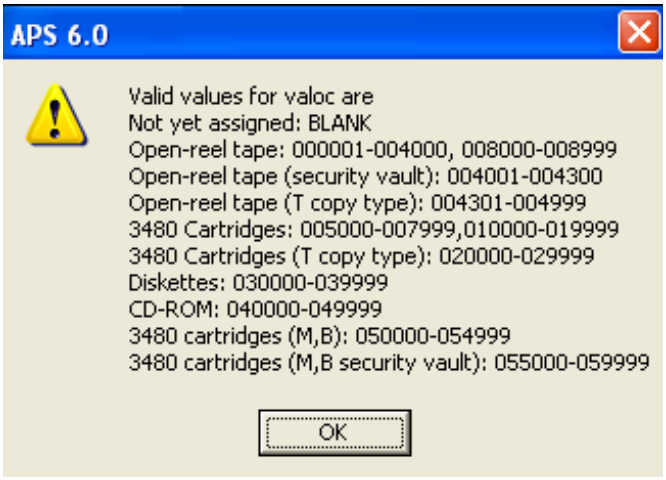


Figure 17: Volume Location Information Message

What This Chapter Contains

This chapter contains the following information:

- Generating Master Copies
- Generating Backup Copies
- Generating Special Copies
- Generating Replacement Copies
- Performing Smart Copies
- System Generated Reports Related to Copy Jobs

7 GENERATING COPIES

This section will describe the process of generating copies to include the following:

1. Generating Master Copies;
2. Generating Backup Copies;
3. Generating Special Copies;
4. Generating Replacement Copies; and
5. Performing Smart Copies;

Each description will contain directions on performing the function, reviewing reports generated by APS that are related to the function (when available), and confirming that the process followed has given the desired results.

7.1 Generating Master Copies

Choosing *Copy/compare* → *Master copy* from the APS Job Menu, as described in Section 3.1, will initiate the process of copying a temporary (agency) tape to a master tape. Alternatively, a master copy can be initiated by pressing the Master copy button  on the APS Menu Bar. It will create file master, file segment, file transaction, and error table entries of type 'M' for the output tape. If entries for the input files already exists they will be updated (if necessary), otherwise they are created (with file type 'T'. The following sequence is used to create a master copy:

1. The system presents the Open Unit Dialog Box to allow the user to specify the primary input and output volumes;
2. Users should note:
    - If the input unit is a disk file drive, as described in Section 2.1 , the Save path scroll box and Browse button are enabled. The Save path scroll box can be set to save the file paths in the database, in a user label on the tape, in both places or in neither. The Browse button must be pressed to select the files to copy using the Select files dialog box. The box is shown in Figure 18: Select File Dialog Box.

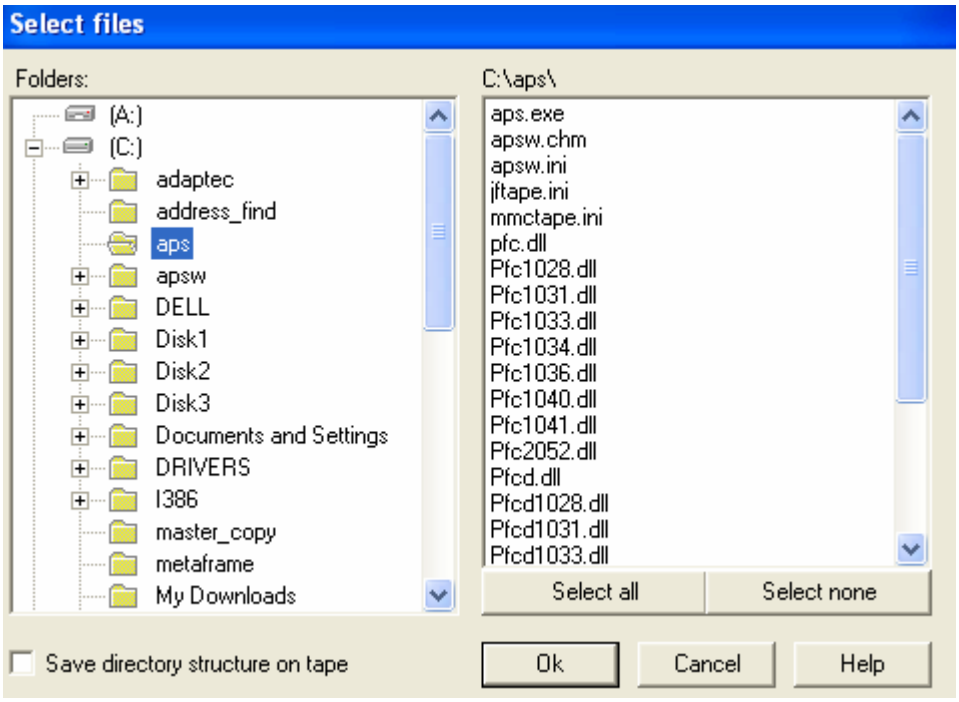


Figure 18: Select File Dialog Box

- If the input unit is a tape image, as described in Section 2.1, the file edit control is enabled to allow the user to key in the name of the file to be used. (Alternatively, the user may press the Browse button and select the file graphically using the Select File Dialog Box). This block is shown in Figure 19: Open Unit/Input Volume Block with Tape Image Selection.

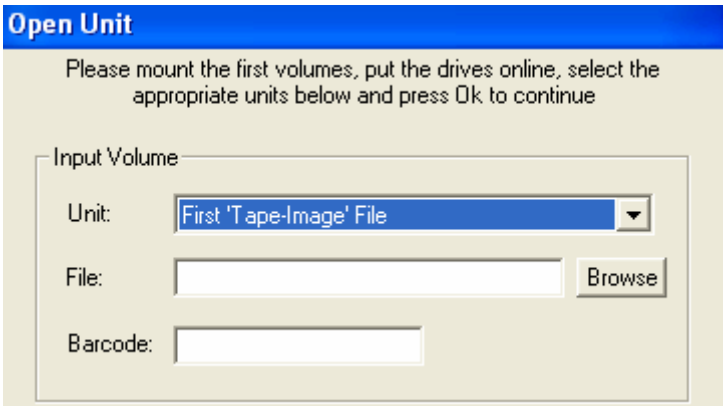


Figure 19: Open Unit/Input Volume Block with Tape Image Selection

- If the Input unit is any type of tape media, (like 9 track, 8 mm, 3480 …) then the user will have a choice to enter a barcode only. Figure 20: Open Unit/Input Volume Dialog Block with 3480.

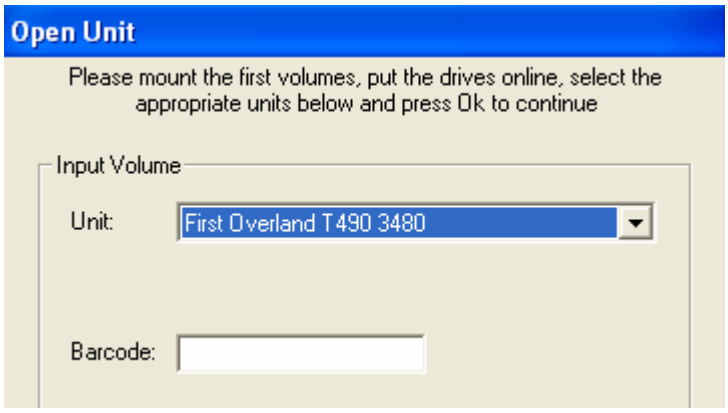


Figure 20: Open Unit/Input Volume Dialog Block with 3480

- If the output unit being opened is of type media tape and supports compression or multiple densities, the Compression combo-box is enabled to allow selection of the desired density, example in image below is of an "8mm Drive". Please note that different tape drives have different compression options. This block is shown in Figure 21: Open Unit/Output Volume Block with 8mm Drive Figure 21.

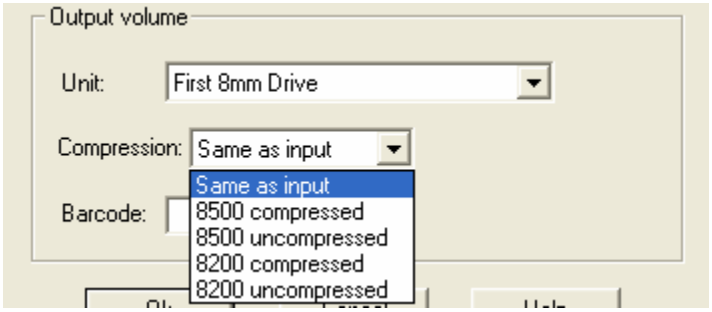


Figure 21: Open Unit/Output Volume Block with 8mm Drive

- If the output Unit is a 9 track drive then only entry available would be for a barcode. This block is shown in Figure 22: Open Unit/Output Volume Block with 9 Track Drive.

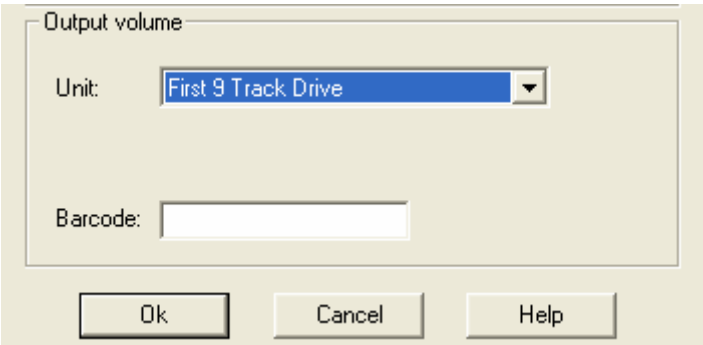


Figure 22: Open Unit/Output Volume Block with 9 Track Drive

- If a disk file, as described in Section 2.1, is specified as the output unit, the Save path scroll box is enabled. If the input tape was created with APS and the path had been preserved in the database or in a user label, save path can be set to restore the saved path. Otherwise, set Save path to "None" and key in the output path in the adjoining edit box. This block is shown in Figure 23: Open Unit/Output Volume Block with Disk File Drive Selection.

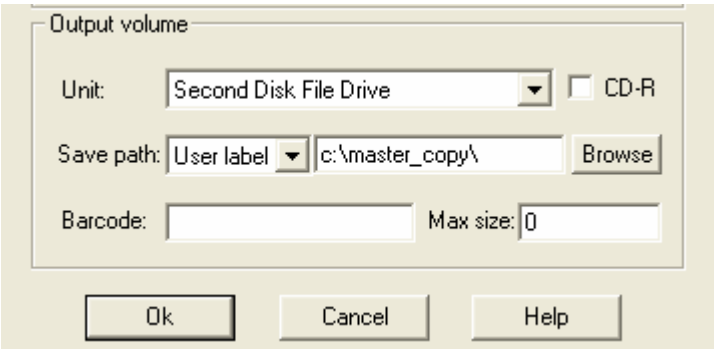


Figure 23: Open Unit/Output Volume Block with Disk File Drive Selection

- If the CD-R box is checked, the output will be written to a CD-R. This block is shown in Figure 24: Open Unit/Output Volume Block with CD-R Box Checked.

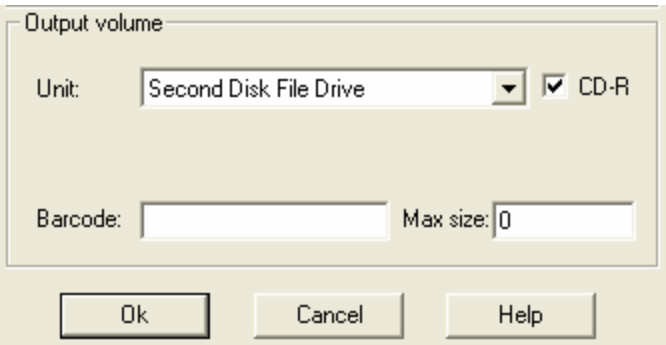


Figure 24: Open Unit/Output Volume Block with CD-R Box Checked

- If a tape-image, as described in Section 2.1, is specified for the output, and the file already exists the user is given the option of overwriting it;
- For either of these two unit types, the Max size edit box is enabled. This field allows the user to specify the maximum size the output file can attain. If more than the specified number of bytes is written, APS will close the output volume and prompt for a new one. To avoid specifying a maximum size, specify 0 for this field to allow infinite length volumes. Note: This field is only used for smart copies, described in Section 7.5, and is ignored for duplicate copies, described in Chapter 9.

3. Once all fields have been filled and the OK button on the Open Unit Dialog Box has been pressed, then the user will be presented with the open volume dialog box to verify the logical information about the input and output volumes. This dialog box allows the user to verify or modify the current settings for the volume identifier and volume assigned location for the input and/or output tapes. The input tape volume id is read from the tape while the output volume id is, by default, the same as the volume bar code. The copy preferences can be set at this point by pressing the Preferences button, as described in Section 20.1, Job Preferences. When this dialog box is completed the VOL1 header label is written to the output tape. This box is shown in Figure 25: Open Volume Dialog Box Figure 25.

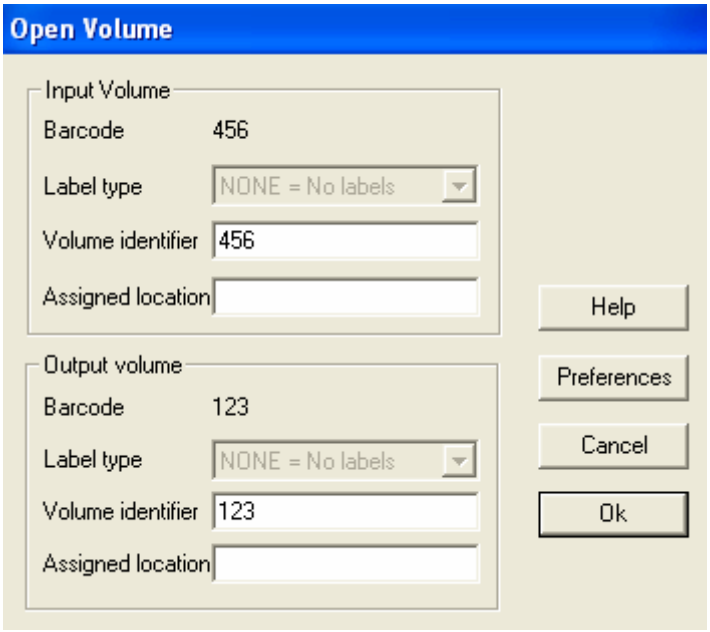


Figure 25: Open Volume Dialog Box

4. If the current file copying mode, as described in Section 20.1 (Job Preferences), is set to prompt for file numbers the user will be prompted for the number of the input file to copy (relative to the beginning of the current volume). This pop-up window will reappear before each file is copied. The prompt is shown in Figure 26: File Number Prompt.

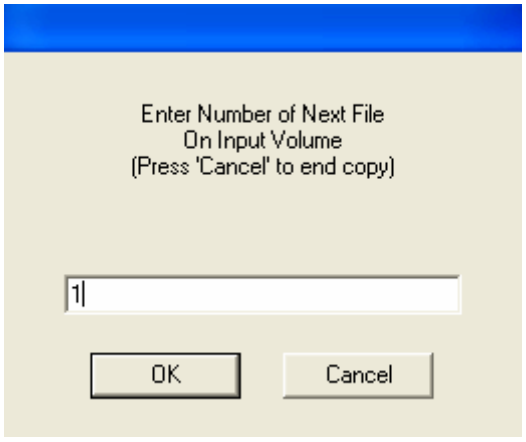


Figure 26: File Number Prompt

5. Once a Number is entered and the OK button pressed, then the user will be presented with the Open File Dialog Box providing the option of accepting or modifying the current settings for both the input and output files. This box is shown in Figure 27: Open File Dialog Box.

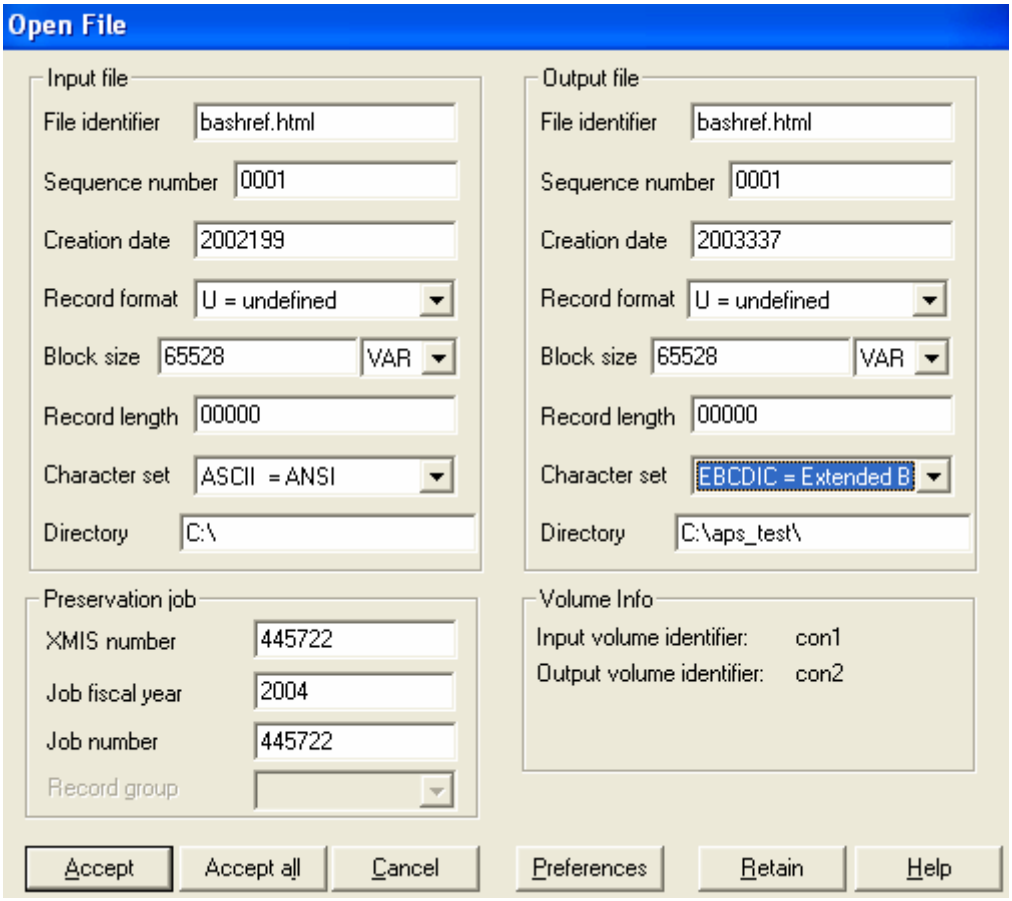


Figure 27: Open File Dialog Box

- The values for the input file are obtained from the tape headers and the first block of the data itself (charset) while those for the output file are based on the current output file modes and on the characteristics of the input file. See Section 20.1, Job Preferences on controlling the File Naming modes.
- The first 'N' record(s) of the input file are read to determine the character set see Section 20.2, Char Set Preferences;
- If the record(s) contain(s) only valid ASCII characters (including tabs and carriage returns) the file is considered ASCII. If the record(s) contain(s) only EBCDIC characters it is considered EBCDIC and if they (it) contain(s) any other characters it is considered BINARY.
- The file is read in a record-by-record fashion to allow the correct identification of variable length record OS tapes that contain binary record lengths embedded in the EBCDIC data. APS will convert character sets if the input is specified as EBCDIC and the output is specified as ASCII, or visa-versa, see image above; see Section 20.2, Char Set Preferences, on specifying input and output character sets. If any other combination is specified, no conversion will be performed;
- On many occasions, users are able to convert files from ASCII to EBCDIC or vice-versa without encountering any errors; however, should the user selects to convert a file from ASCII to EBCDIC and errors are encountered during the conversion, a message will appear to inform the user about the error and location of the error file. APS will provide the user the

option of terminating the job or continuing. As displayed in the image below, users with Senior Reviewer roles and above have the option of accepting a Reference Copy job with the Conversion errors. This option is discussed in Section 15.1, Making Reference Copies that Include Non-Standard Characters. This box is shown in Figure 28: Conversion Error Dialog Box.

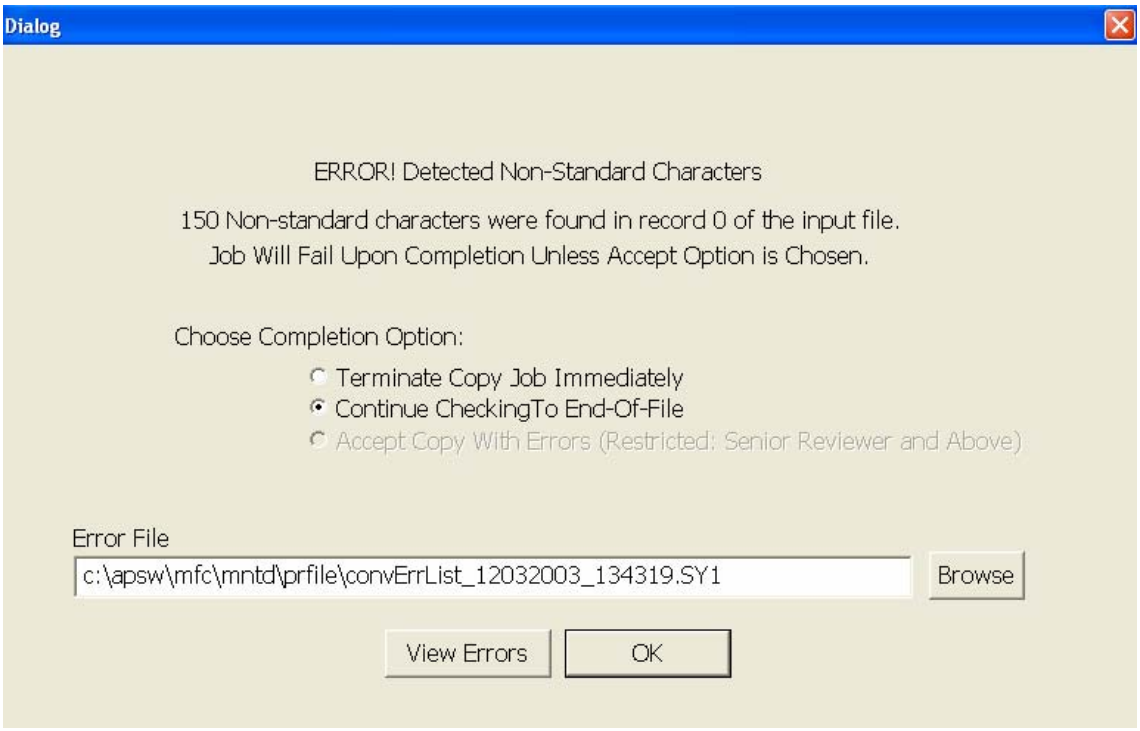


Figure 28: Conversion Error Dialog Box

1. User can change the location at which the error file is to be saved by clicking the "Browse" button. The user will be presented by a dialog box allowing him/her to change the name and location of the error file. This box is shown in Figure 29: Save Error File as Dialog Box.

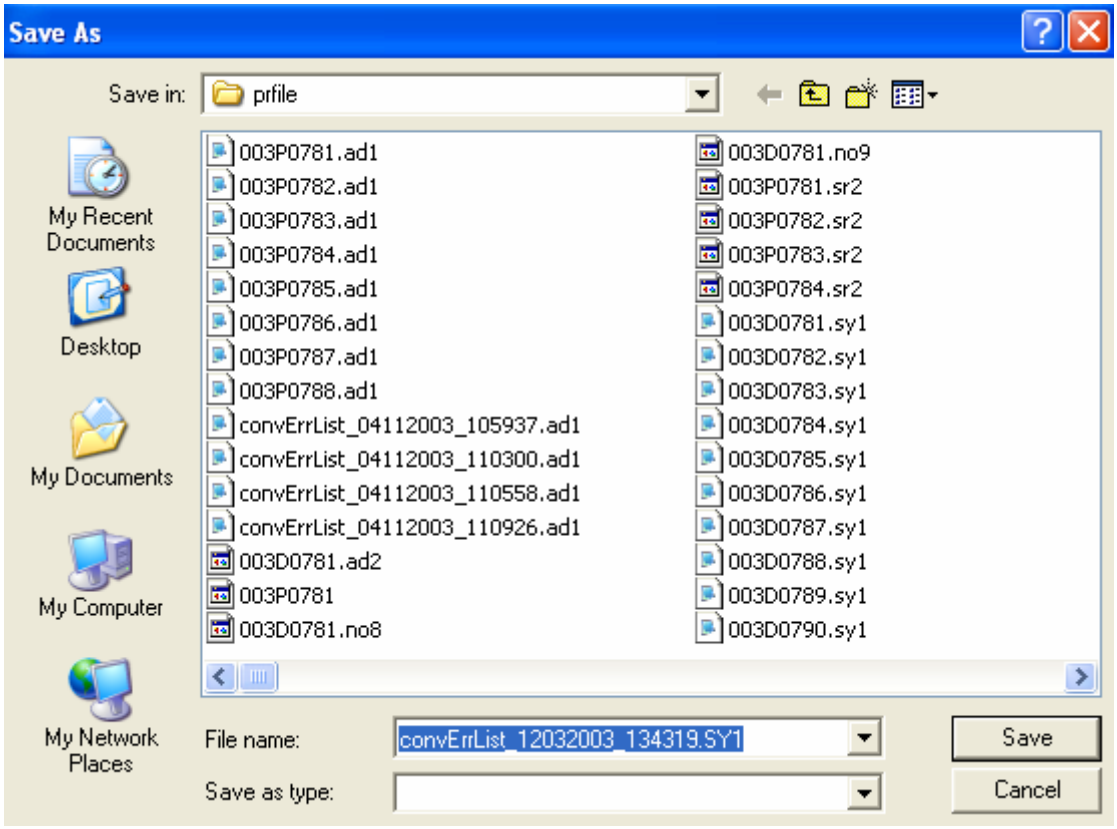


Figure 29: Save Error File as Dialog Box

2. if the user clicks the "View Errors" button, a message displays informing the user about the location and use of the error file, click the Ok button on the message box to return to the Conversion Error dialog box. This message is shown in Figure 30: Conversion Error File Location and Use.

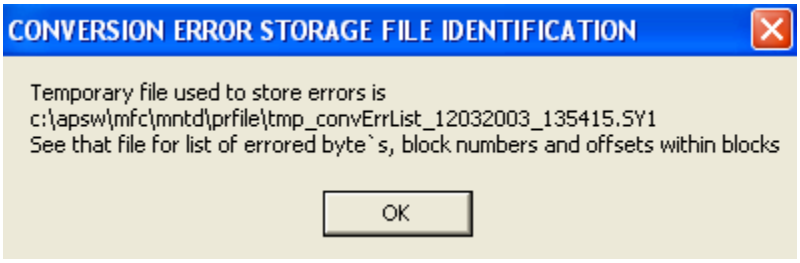


Figure 30: Conversion Error File Location and Use

3. If user elects to terminate copy job immediately and clicks the Ok button, then a message displays informing user about number and type of errors, job status (Abort) and location of error file. Click OK on the message box to return to the main menu. This message is shown in Figure 31: Error Count and Description Message.

Figure 31: Error Count and Description Message

4. If the user elects to Continue Checking to end-of-file option from the Conversion error dialog box and clicks Ok, a message appears to inform user about total number of errors encountered, job status (Abort) and location of error file. Click the Ok button on the message box to return to the main menu. This box is shown in Figure 32: Total Number of Errors Encountered.

Figure 32: Total Number of Errors Encountered

- If the Treat Null as Text box is checked, as described in Section 20.2, NULL (00) bytes will be treated either as text (ASCII/EBCIDIC) or binary;
- Data can be read from the input tape drive and written to the output tape drive in either fixed or variable block mode.
- The user can also press the Accept all button to copy all remaining files on a volume set without user intervention. The open file dialog box will not be displayed before each file is copied and default values will be used.
- APS fills in default input and output settings based on the input tape and the output tape labeling format. The user can override these settings on a file-by-file basis by keying in new settings before copying each file. Alternatively, the user can specify default settings for all subsequent files by pressing the Retain button to display the Retain Settings dialog box. This box is shown in Figure 33: Retain Settings Dialog Box.

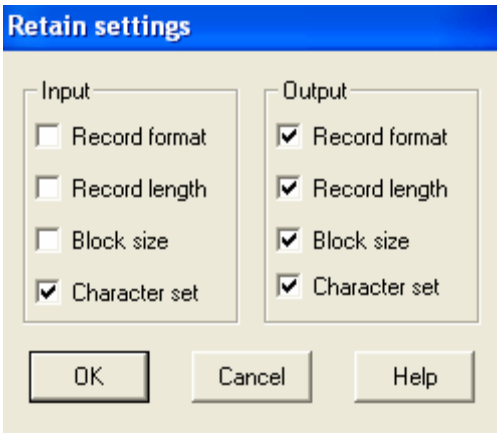


Figure 33: Retain Settings Dialog Box

- Pressing the *Preferences* button on the Open File Dialog Box will display the Preferences Dialog Box / Printing Preferences Block to allow the user to set various settings affecting the copy job, as described in Section 20;

6. Once the above job is complete, and if the output filename was going to be altered, APS will provide a message informing the user. This box is shown in Figure 34: Filename Altered Message Box.

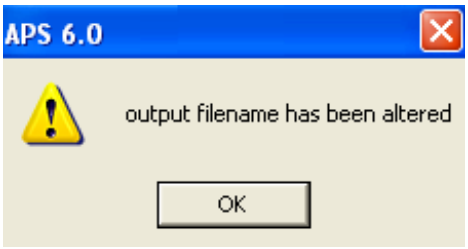


Figure 34: Filename Altered Message Box

Pressing the OK button on the above message will display a message asking the user to make a choice whether the file continue on the next volume, please note that this message displays only when required. This option is shown in Figure 35: File Continue on Next Volume Option.

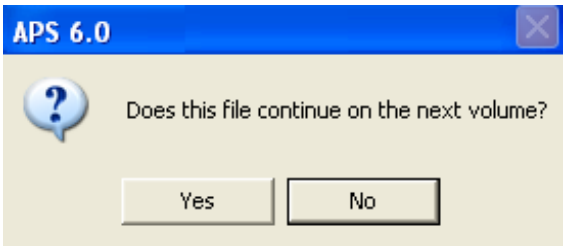


Figure 35: File Continue on Next Volume Option

Next two steps will be to select whether or not the user wants to print the Barcode (the image below will

be displayed twice, once for the input barcode and once for the output barcode), displayed below is one sample of both images. This option is shown in Figure 36: Barcode Print Option.

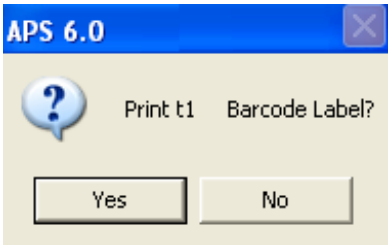


Figure 36: Barcode Print Option

7. When the Copy job is done, the Copy Status Screen will be displayed. This is shown in Figure 37: Copy Status Screen.

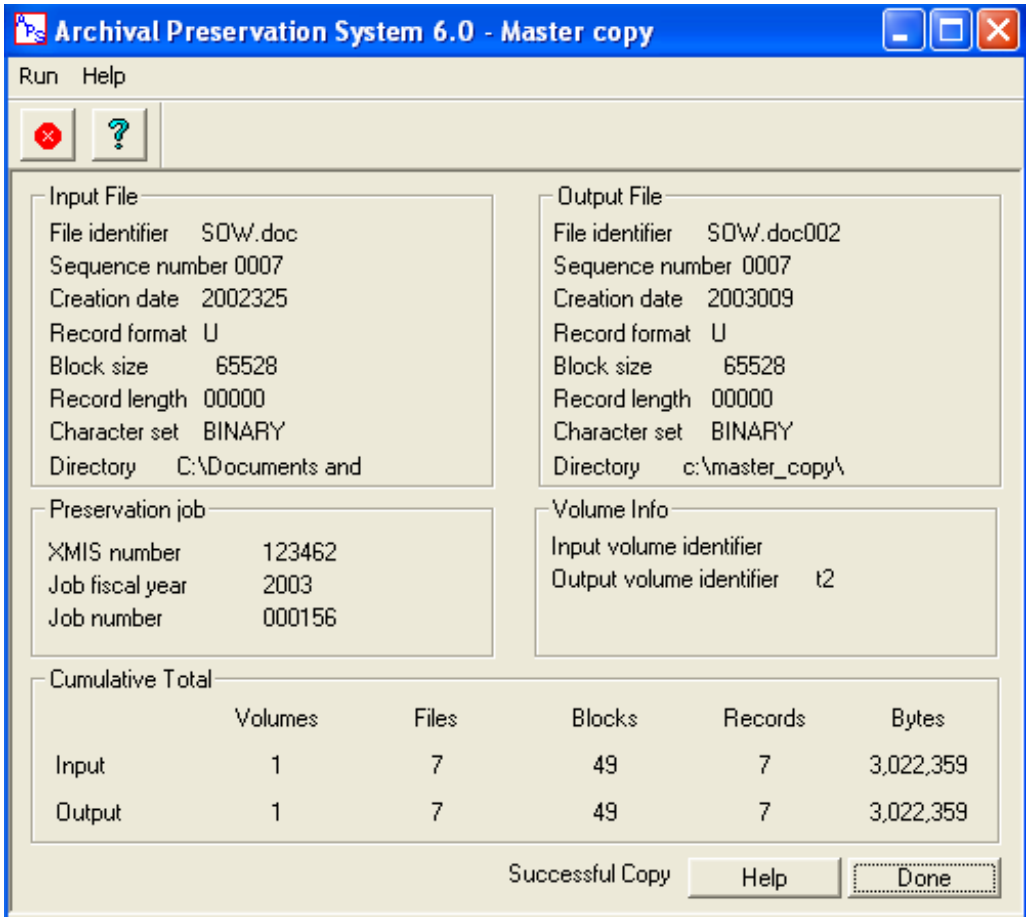


Figure 37: Copy Status Screen

8. Clicking the Done button on the Copy Status Screen will start a Compare operation for the volumes that were copied. The Open Unit Dialog Box to display, however this Dialog Box has two blocks one titled Input Volume and the other Secondary Input Volume, instead of one being Input Volume and the other Output Volume. The box is shown in Figure 38: Compare Copies Dialog Box.

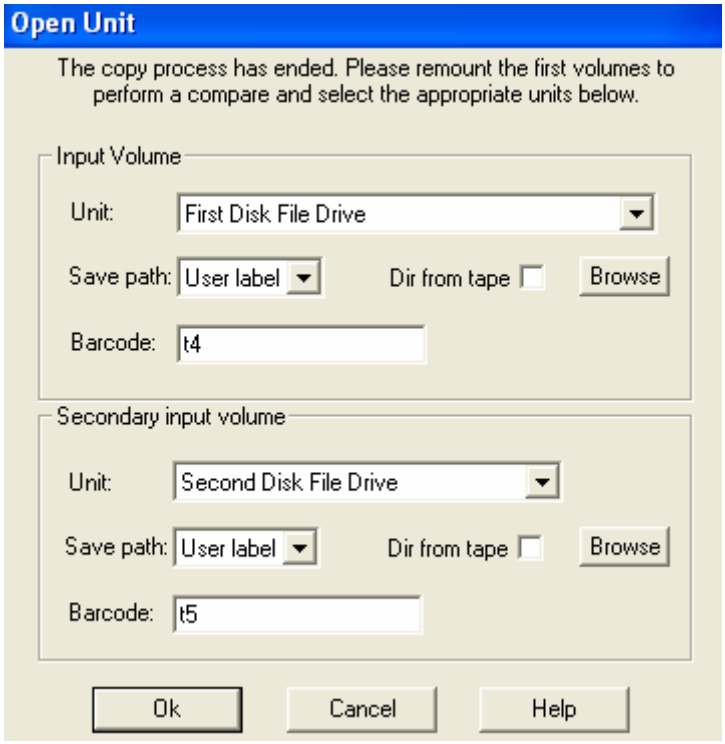


Figure 38: Compare Copies Dialog Box

- The APS Compare operation will verify that the copy job ran successfully and generate job reports in a format specified in the Printing options dialog box. The compare performed after a copy job is similar to that performed when choosing *Copy/compare* → *Compare tapes* (Section 8), from the APS Job menu. When comparing tapes and the dir from tape checkbox is checked, APS will automatically obtain the list of files to compare from the tape. (Note: If writing to a disk file, then the first file on the output tape must be a directory file).

7.2 Generating Backup Copies

Choosing *Copy/compare* → *Backup copy* from the APS Job Menu (Section 3.1), will initiate the process of copying a master tape to a backup tape. A backup copy can be initiated by pressing the Backup copy button  on the APS Menu Bar. Backup copy will create file master, file segment, file transaction, and error table entries of type 'B' for the output tape. Entries for the input files must already exist in the database (they will be updated if necessary).

The procedure for creating a backup copy is similar to that of creating a master copy, reference Section 7.1 on page 38. The backup copy jobs (files) are assigned the same Job number as the master copy.

7.3 Generating Special Copies

Choosing *Copy/compare* → *Special copy* from the APS Job menu, as described in Section 3.1, will initiate the process of copying a tape to a special tape. The user is given the option to add entries to the database or to bypass their addition. If the user chooses to record this copy job in the database, APS will create file master, file segment, file transaction, and error table entries with file type 'S' for the output tape. Entries for the input files must already exist in the database. This option is shown in Figure 39: Add Files to Database Option.

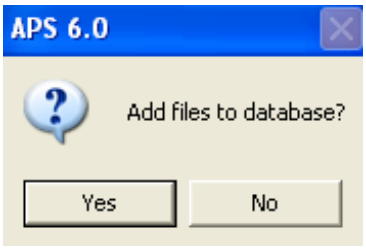


Figure 39: Add Files to Database Option

The procedure for creating a special copy is identical to that of creating a master copy, as described in Section 7.1. The preservation status of the output files are set to "SPECIAL". The input files are given file operation type 'K' (file read to make other copy) and the output files are given file operation type 'F' (file written for first time copy).

7.4 Generating Replacement Copies

Choosing *Copy/compare* → *Replacement copy* from the APS Job Menu will initiate the process of replacing a copy of files that are ten years old, needed to be replaced or that has been lost or damaged. A master copy can be replaced by copying from the ten year old master tape. If that master copy is damaged, then the backup copy will be used.. All volumes in the set must be replaced. When a file is replaced, all file master, file segment and error table rows for the replaced (old) file are given a new file type ('D' for old master, 'E' for old backup). New entries with the proper file type ('M' for master, 'B' for backup) are created for the new copy.

It is important to note that a Replacement copy job will not be recorded in the database until a compare job is performed successfully following the copy job. Should the job get cancelled after copy and before compare, the Replacement copy job must be repeated and the Compare operation of the Replacement Copy job must be completed to have a record of the process in the database. The dialog box is shown in Figure 40: Enter Barcode of Volume to be Replaced Dialog Box.

APS will prompt for the bar code of the first volume in the volume set to be replaced. .

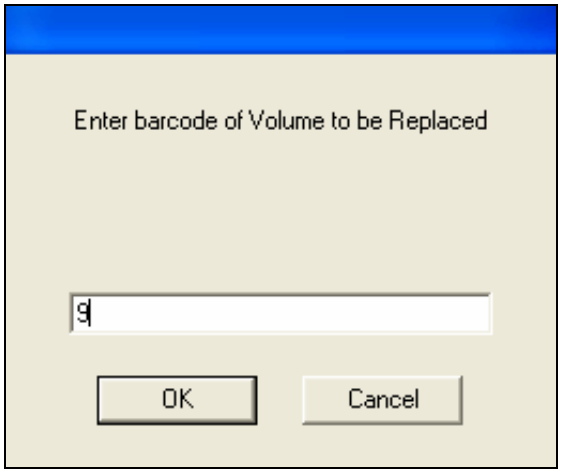


Figure 40: Enter Barcode of Volume to be Replaced Dialog Box

After completing the copy of the first volume and if there is more than one volume, APS will automatically prompt the user to replace all volumes in the set. This prompt is shown in Figure 41: Prompt to Enter Barcode of Next Volume.

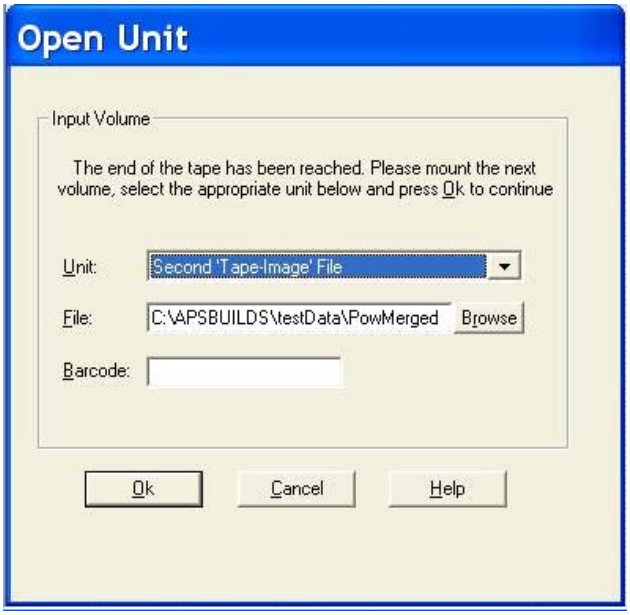


Figure 41: Prompt to Enter Barcode of Next Volume

The dialog box for a Replacement Copy job is shown in Figure 42: Open File Dialog Box for a Replacement Copy Job.

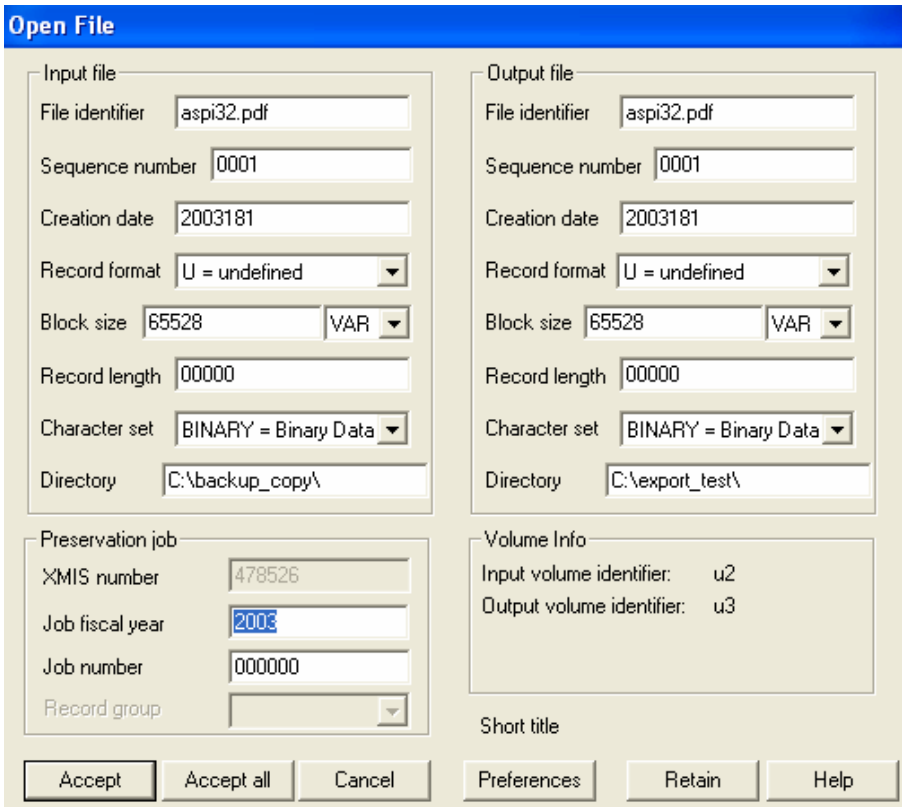


Figure 42: Open File Dialog Box for a Replacement Copy Job

The procedure for actually creating the replacement copy is similar to that of creating a master copy, reference Section 7.1 on page 38. A row indicating the replacement is added to the File Transaction table for each replaced file.

7.5 Performing Smart Copies

To copy tapes without invoking the database choose *Copy/compare* → *Smart copy* from the APS Job Menu. Alternatively, Smart Copy function can be accessed by pressing the  button on APS Menu Bar. This function operates in a manner similar to the other Copy functions described above, except that the user is not prompted for Volume barcodes, Volume assigned location, or XMIS numbers, and no records are added to the database. Other differences between Smart copy and other Copy functions are depicted in the Figure 43: Open Unit Dialog Box for a Smart Copy Job, Figure 44: Open Volume Dialog Box for a Smart Copy Job, and Figure 45: Open File Dialog Box for a Smart Copy Job.

The Volume barcode is grayed out, as shown in Figure 43: Open Unit Dialog Box for a Smart Copy Job.

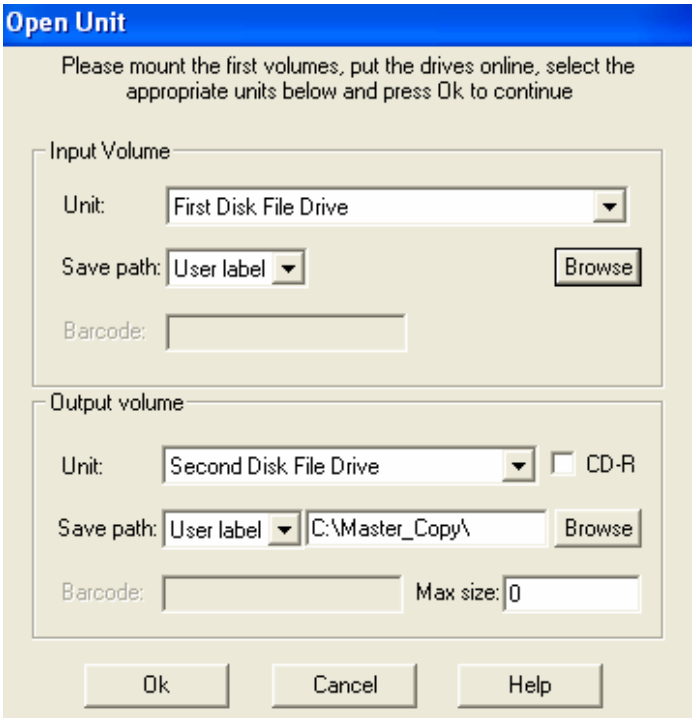


Figure 43: Open Unit Dialog Box for a Smart Copy Job

The Volume assign location is grayed out, as shown in Figure 44: Open Volume Dialog Box for a Smart Copy Job.

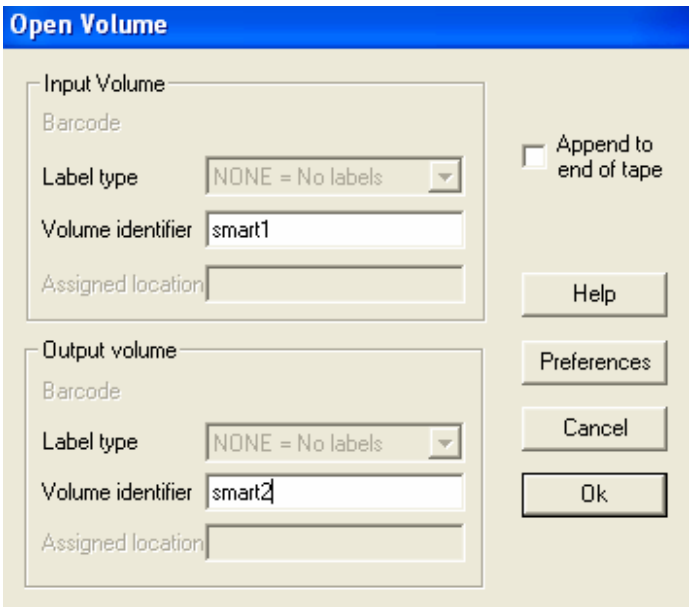


Figure 44: Open Volume Dialog Box for a Smart Copy Job

The File XMIS number is grayed out, as shown in Figure 45: Open File Dialog Box for a Smart Copy Job.

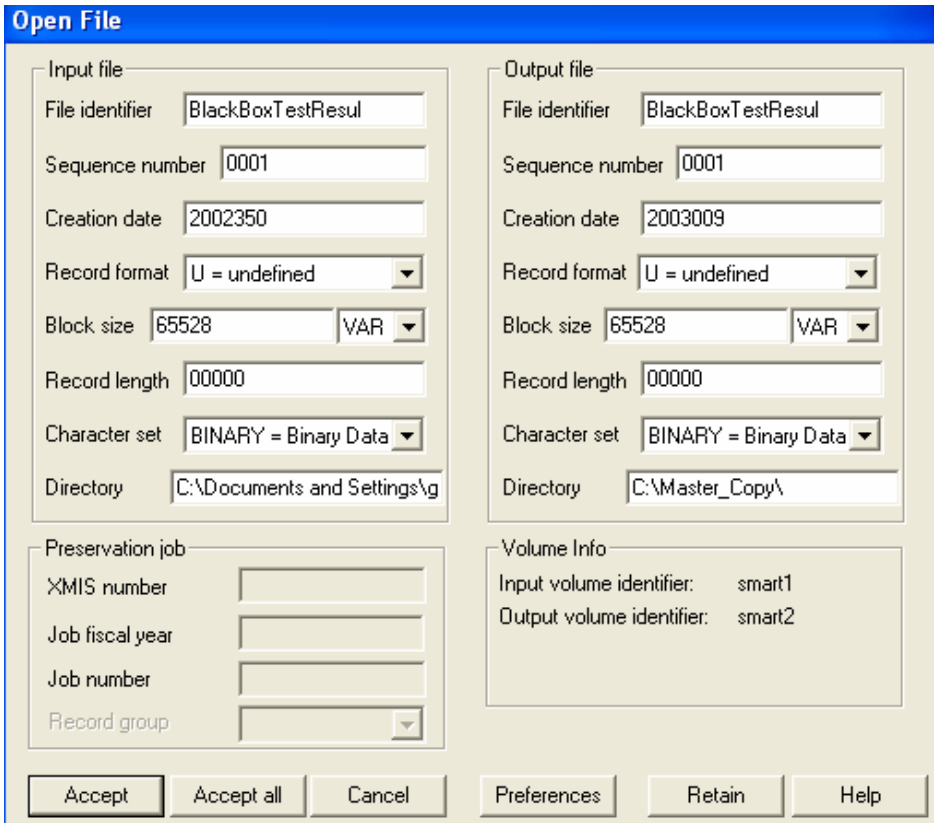


Figure 45: Open File Dialog Box for a Smart Copy Job

Note: unlike other Copy functions, when a Smart Copy job is completed, users will not be prompted to compare and check results; however, users may elect to run a Smart Compare.

7.6 Performing Reference Copies

The Reference copy is a special copy where APS will not create new entries in the volume tables or the file tables. APS will calculate the amount of time required to perform these functions and save those values in the Reference table. When all steps have been completed, a report can be generated summarizing these steps and the time required to perform them.

To copy tapes without invoking the database, choose *Copy/compare* → *Reference copy* from the APS Job Menu, as shown in Figure 46: Selecting Reference Copy from the Main Menu.

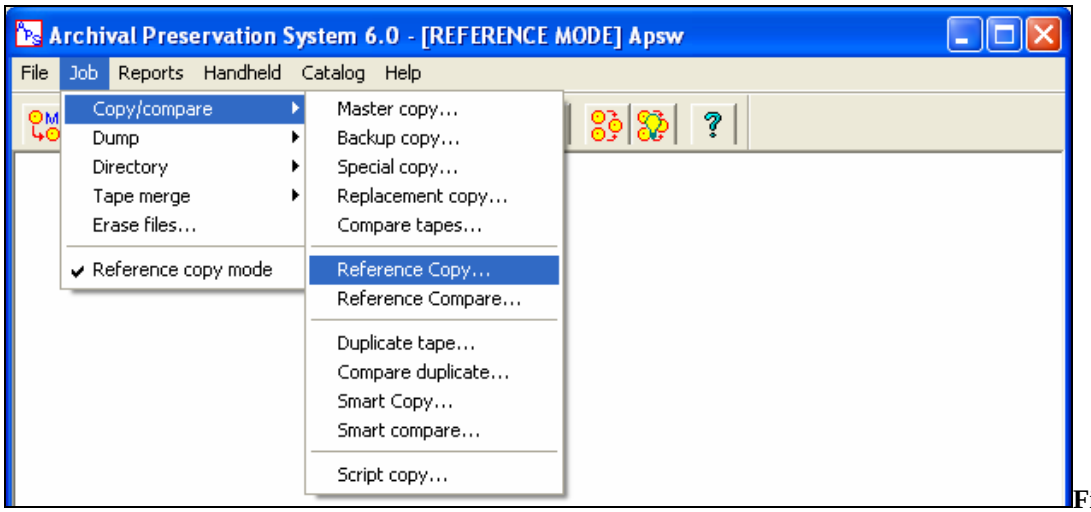


Figure 46: Selecting Reference Copy from the Main Menu

This function operates similar to the other Copy functions described above. An exception is that the user is not prompted for bar codes or XMIS numbers, and no records are added to the database. Other differences between Reference copy and other Copy functions are depicted in the Figure 47: Open Unit Dialog Box for a Reference Copy Job, Figure 48: Open Volume Dialog Box for a Reference Copy Job, Figure 49: Next File Dialog Box for a Reference Copy Job, Figure 50: Fiscal Year Dialog Box for a Reference Copy Job, Figure 51: Job Number Dialog Box for a Reference Copy Job, and Figure 52: Open File Dialog Box for a Reference Copy Job.

The Volume barcode is grayed out, as shown in Figure 47: Open Unit Dialog Box for a Reference Copy Job.

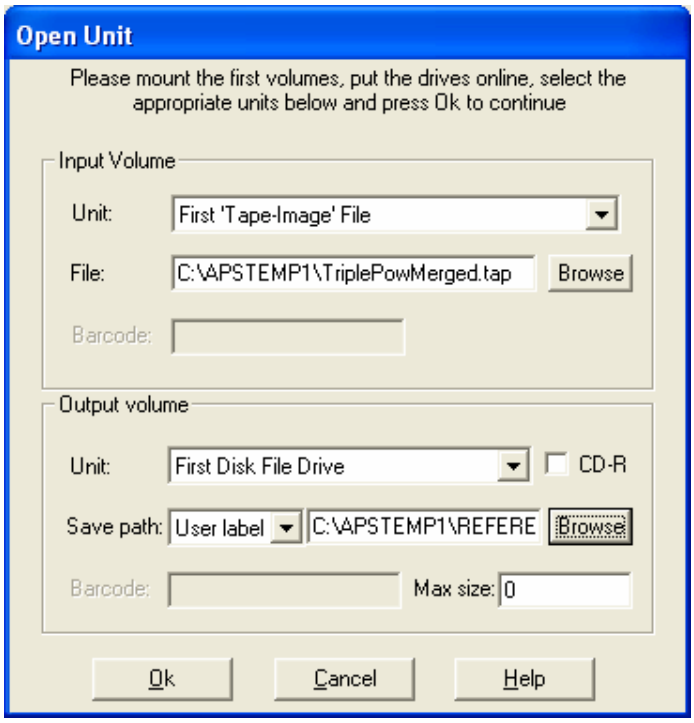


Figure 47: Open Unit Dialog Box for a Reference Copy Job

The Volume assigned location is grayed out, as shown in Figure 48: Open Volume Dialog Box for a Reference Copy Job.

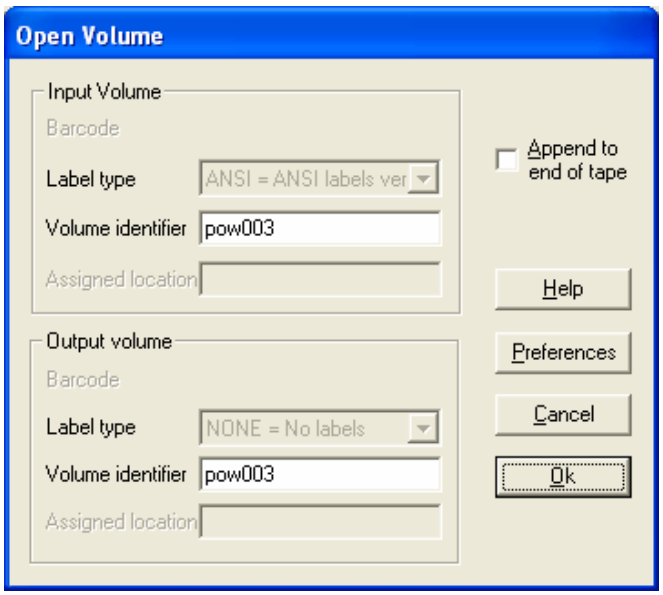


Figure 48: Open Volume Dialog Box for a Reference Copy Job

It is important to change the Job preferences and set the File Copying mode to “Prompt for File Numbers”. In the Reference copy, not all the files in the tape will be copied and this will allow the user to select the files in the tape to be copied. The user can specify the File number in the volume to copy in the data entry screen, as shown in Figure 49: Next File Dialog Box for a Reference Copy Job.

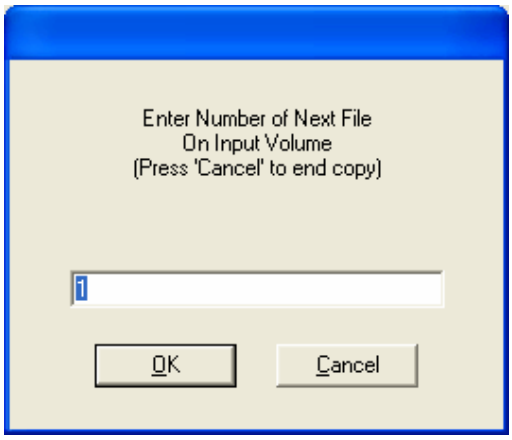


Figure 49: Next File Dialog Box for a Reference Copy Job

In the Reference Copy job, two new inquiries are performed before opening the file. These are the Job Fiscal Year and the Job number. This information will be used to uniquely identify the Reference Copy job.

The user will enter the Fiscal Year of the Reference job to run on the data entry screen, as shown in Figure 50: Fiscal Year Dialog Box for a Reference Copy Job.

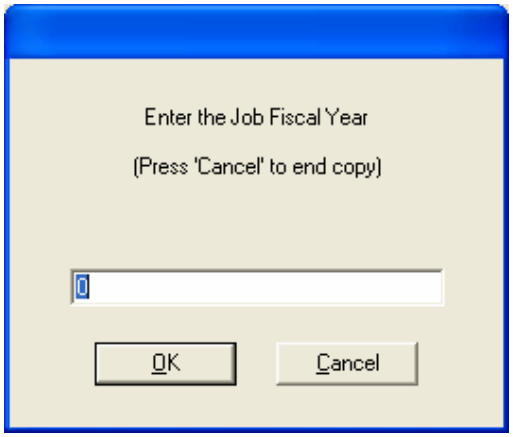


Figure 50: Fiscal Year Dialog Box for a Reference Copy Job

The user can specify the Job number of the Reference job to run in the data entry screen, as shown in Figure 51: Job Number Dialog Box for a Reference Copy Job.

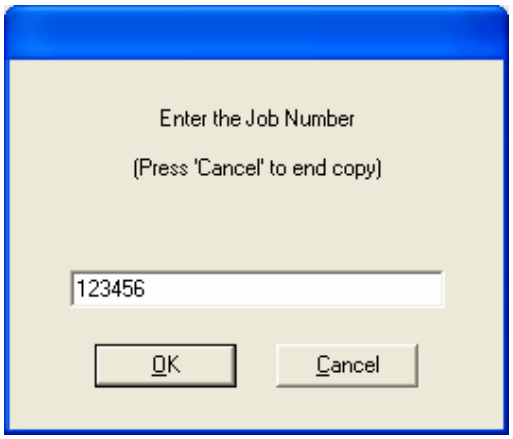


Figure 51: Job Number Dialog Box for a Reference Copy Job

The Input File information, the Output File information, and the Reference Copy information is shown in Figure 52: Open File Dialog Box for a Reference Copy Job. In this screen, the user will have to enter the proper Output File information and the XMIS number in the Refernce Copy information. The Job Fiscal Year and the Job number are preloaded with the information that the user entered in the two previous screens.

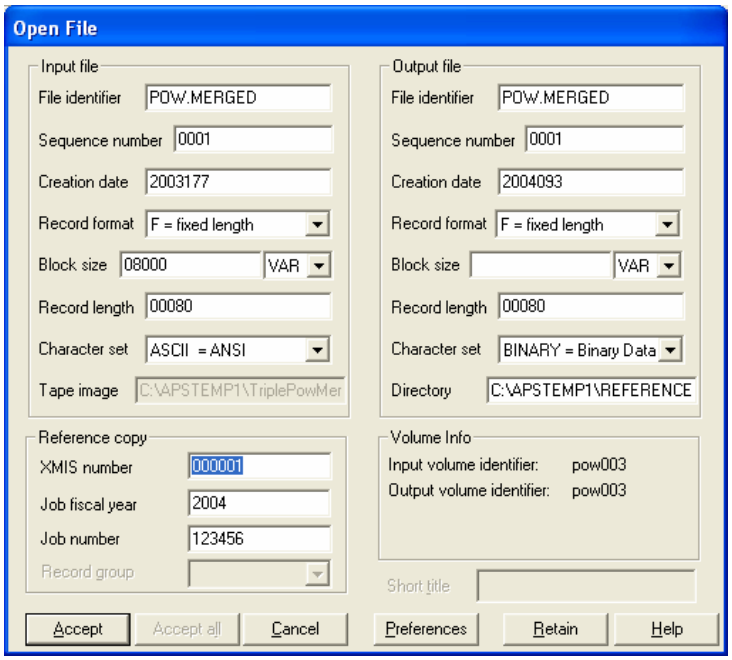


Figure 52: Open File Dialog Box for a Reference Copy Job

Like other Copy functions, when a Reference Copy job is complete, the user will be prompted to compare and check the results. However, users may elect not to run the Reference compare. The Reference compare will prompt the user to reopen the unit and when selecting the Output files, the user has to select all the files in the directory as shown in Figure 53: Select Files Dialog Box for a Reference Copy Job.

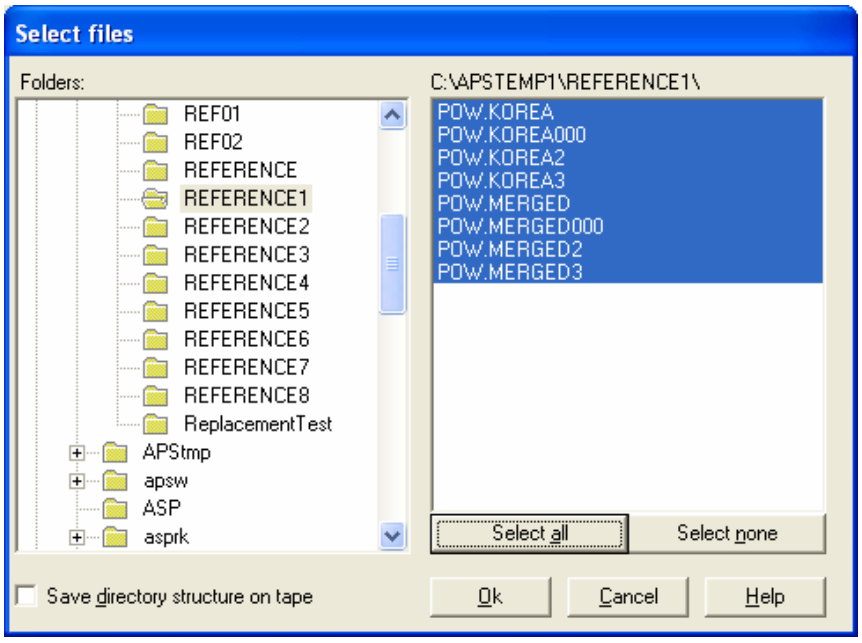


Figure 53: Select Files Dialog Box for a Reference Copy Job

After the files in the first tape have been successfully compared, a new inquiry screen will question the user if more files are to be copied to the current reference job, as shown in Figure 54: Copy More Files Dialog Box for a Reference Copy Job.

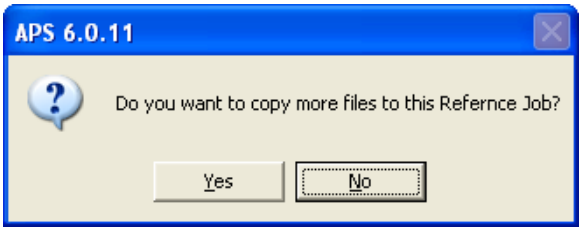


Figure 54: Copy More Files Dialog Box for a Reference Copy Job

After all files in all the tapes has been successfully copied and/or compared, a new inquiry screen will question the user if the files are to be copied to the CD, as shown in Figure 66: Open Unit Dialog Box for Comparing Duplicate Tapes.

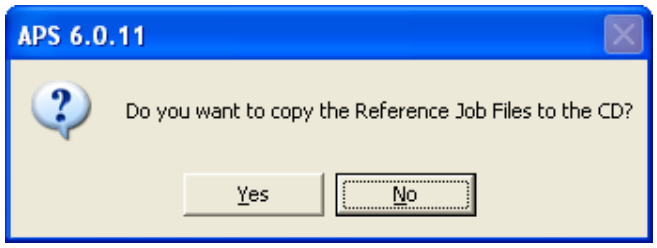


Figure 55: Copy to CD Dialog Box for a Reference Copy Job

In this part of the job, the files will be copied to a temporary directory and then to the CD. Once the CD Copy process starts, the New Volume Name inquiry screen will be displayed. In this screen the user has the opportunity to change the Volume name of the CD, as shown in Figure 56: CD Volume Name Dialog Box for a Reference Copy Job. The APS system will default this name to YYYY-JJJJJJ-#. YYYY is the Fiscal Year of the Reference Job, JJJJJJ is the Job number of the Reference Job, and # is the sequence number of the CD. Once the files are successfully copied onto the CD, the files in the temporary directory will be deleted.

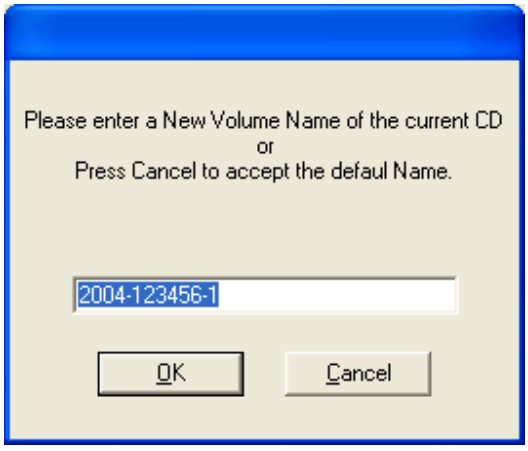
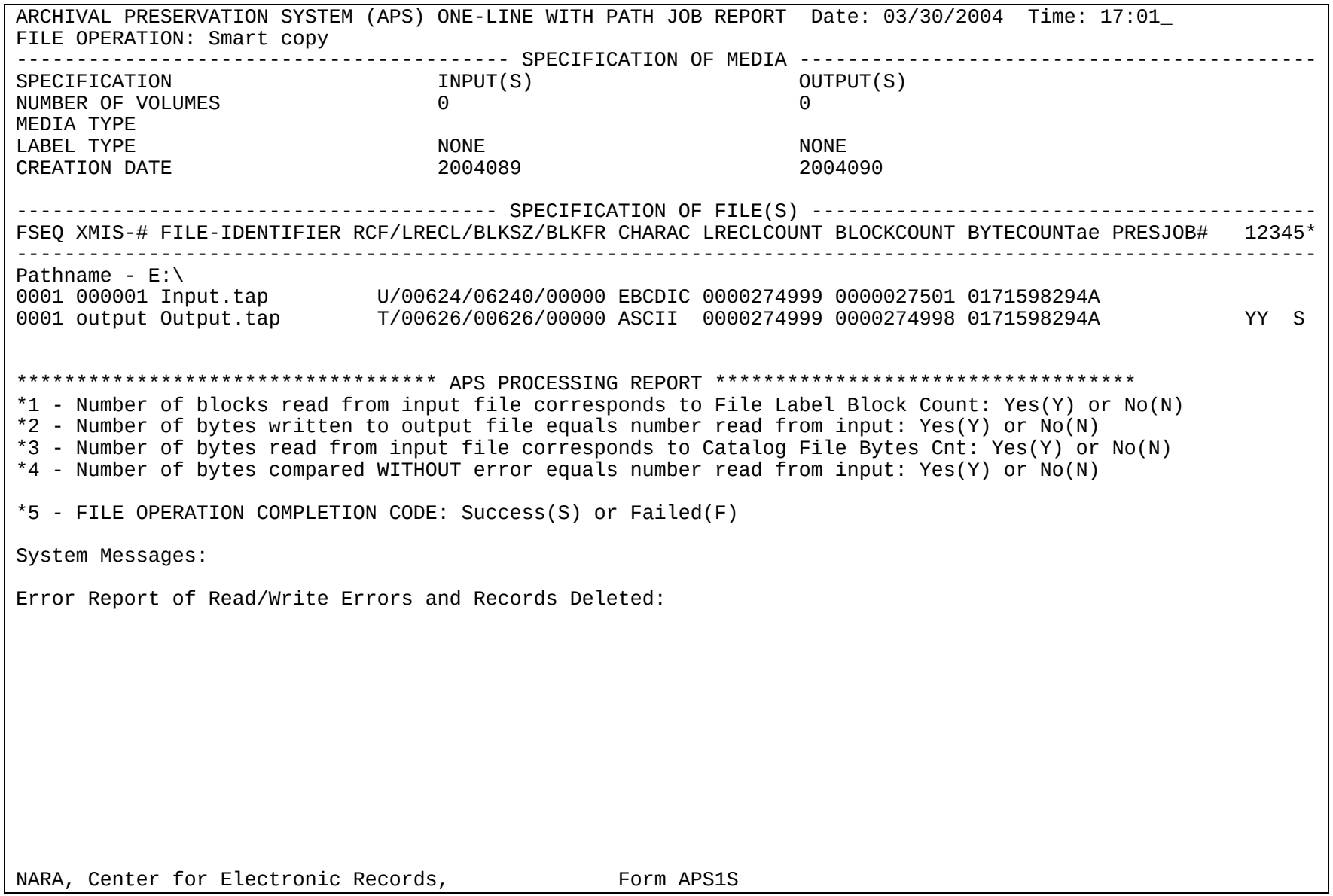


Figure 56: CD Volume Name Dialog Box for a Reference Copy Job

7.7 Reports Related to Copy Jobs

At the end of any of the Copy Jobs discussed above, the system will generate a report summarizing the job. Each report will have a File Operation title describing the type of Copy job, i.e. Master, Backup, Replacement, Special or Smart Copy. The File Operation title will be found in the upper left hand corner of the report. A sample Smart Copy report is shown in Figure 57: Smart Copy Report.



```
ARCHIVAL PRESERVATION SYSTEM (APS) ONE-LINE WITH PATH JOB REPORT  Date: 03/30/2004  Time: 17:01_
FILE OPERATION: Smart copy
---------------------------------------- SPECIFICATION OF MEDIA ----------------------------------------
SPECIFICATION                    INPUT(S)                    OUTPUT(S)
NUMBER OF VOLUMES                0                           0
MEDIA TYPE
LABEL TYPE                       NONE                        NONE
CREATION DATE                    2004089                     2004090

---------------------------------------- SPECIFICATION OF FILE(S) ----------------------------------------
FSEQ XMIS-# FILE-IDENTIFIER RCF/LRECL/BLKSZ/BLKFR CHARAC LRECLCOUNT BLOCKCOUNT BYTECOUNTae PRESJOB#   12345*
----------------------------------------------------------------------------------------------------------
Pathname - E:\
0001 000001 Input.tap         U/00624/06240/00000 EBCDIC 0000274999 0000027501 0171598294A
0001 output Output.tap        T/00626/00626/00000 ASCII  0000274999 0000274998 0171598294A            YY  S


********************************** APS PROCESSING REPORT **********************************
*1 - Number of blocks read from input file corresponds to File Label Block Count: Yes(Y) or No(N)
*2 - Number of bytes written to output file equals number read from input: Yes(Y) or No(N)
*3 - Number of bytes read from input file corresponds to Catalog File Bytes Cnt: Yes(Y) or No(N)
*4 - Number of bytes compared WITHOUT error equals number read from input: Yes(Y) or No(N)

*5 - FILE OPERATION COMPLETION CODE: Success(S) or Failed(F)

System Messages:

Error Report of Read/Write Errors and Records Deleted:









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```

Figure 57: Smart Copy Report

The File Conversion Error Report lists the number of conversion errors found in each record. A sample of this report is shown in Figure 58: APS File Conversion Error Report. This following information is listed in the report for each conversion error:

- Value of the non-standard character causing the conversion error
- Record containing the non-standard character
- Offset of the non-standard character within the record

Section 7.6.1 provides instructions for viewing the non-standard characters when they occur in block-delimited input files. Section 7.6.2 provides instructions for viewing the non-standard characters when they occur in record-delimited input files.

```
!  APS FILE CONVERSION ERROR REPORT  03/31/2004 09:20:47                    _
Error Summary:
Attempted to convert from ASCII  to EBCDIC
451 Non-standard characters were found in 8 records(s) of the input file.
18 non-standard chars found in record 26
80 non-standard chars found in record 27
52 non-standard chars found in record 28
1 non-standard chars found in record 5384
64 non-standard chars found in record 8360
80 non-standard chars found in record 8361
80 non-standard chars found in record 8362
76 non-standard chars found in record 8363

Operator chose to continue checking to end of file, then terminate copy job.

VBAR:       VALOC:       File Type: ------------------------------------- SPECIFICATION OF FILE(S) ------
-----------------------------------
FSEQ XMIS-# FILE-IDENTIFIER RCF/LRECL/BLKSZ/BLKFR CHARAC LRECLCOUNT BLOCKCOUNT BYTECOUNTae PRESJOB#   12345*
0001 000000 bashrefMultiErr.h F/00080/4000 /00050 ASCII  0000008381 0000000168 0000670480A

Listing of individual errors is presented below:
REC:00000026 OFF:0000003e VAL:06 REC:00000026 OFF:0000003f VAL:06 REC:00000026 OFF:00000040 VAL:06
REC:00000026 OFF:00000041 VAL:06 REC:00000026 OFF:00000042 VAL:06 REC:00000026 OFF:00000043 VAL:06
REC:00000026 OFF:00000044 VAL:06 REC:00000026 OFF:00000045 VAL:06 REC:00000026 OFF:00000046 VAL:06
REC:00000026 OFF:00000047 VAL:06 REC:00000026 OFF:00000048 VAL:06 REC:00000026 OFF:00000049 VAL:06
REC:00000026 OFF:0000004a VAL:06 REC:00000026 OFF:0000004b VAL:06 REC:00000026 OFF:0000004c VAL:06
REC:00000026 OFF:0000004d VAL:06 REC:00000026 OFF:0000004e VAL:06 REC:00000026 OFF:0000004f VAL:06
REC:00000027 OFF:00000000 VAL:06 REC:00000027 OFF:00000001 VAL:06 REC:00000027 OFF:00000002 VAL:06
REC:00000027 OFF:00000003 VAL:06 REC:00000027 OFF:00000004 VAL:06 REC:00000027 OFF:00000005 VAL:06
REC:00000027 OFF:00000006 VAL:06 REC:00000027 OFF:00000007 VAL:06 REC:00000027 OFF:00000008 VAL:06
REC:00000027 OFF:00000009 VAL:06 REC:00000027 OFF:0000000a VAL:06 REC:00000027 OFF:0000000b VAL:06
REC:00000027 OFF:0000000c VAL:06 REC:00000027 OFF:0000000d VAL:06 REC:00000027 OFF:0000000e VAL:06
REC:00000027 OFF:0000000f VAL:06 REC:00000027 OFF:00000010 VAL:06 REC:00000027 OFF:00000011 VAL:06
REC:00000027 OFF:00000012 VAL:06 REC:00000027 OFF:00000013 VAL:06 REC:00000027 OFF:00000014 VAL:06
REC:00000027 OFF:00000015 VAL:06 REC:00000027 OFF:00000016 VAL:06 REC:00000027 OFF:00000017 VAL:06
REC:00000027 OFF:00000018 VAL:06 REC:00000027 OFF:00000019 VAL:06 REC:00000027 OFF:0000001a VAL:06
REC:00000027 OFF:0000001b VAL:06 REC:00000027 OFF:0000001c VAL:06 REC:00000027 OFF:0000001d VAL:06
```

Figure 58: APS File Conversion Error Report.

7.7.1 Viewing Non-Standard Characters on Block-Delimited files

Block-delimited is used here to indicate files that have a 0 record length, or a record length equal to the block length. This is the case for disk files. To view the errors, perform the following steps:

1. Open the file in Job->Dump->Simple Dump.
2. Use the **Block->SkipToBlock** command (F6) to view the block, by inputting the decimal block number from the **REC** field.
3. Scroll to the hexadecimal offset indicated by the offset value, shown in the **OFF** field. The non-standard character(s) should be presented in red, with values equal to those presented in the **VAL** fields.

7.7.2 Viewing Non-Standard Characters on Record-Delimited files

Record-delimited is used here to indicate files that have a record length greater than zero and less than the block length. To view the errors, perform the following steps:

1. Open the file in Job->Dump->Smart Dump.
2. Determine block containing the record. To do this, divide the record number by the number of records per block. For example, if there are 50 records per block, record 8360 will be in block 167.
3. Use the **Block->SkipToBlock** command (F6) to view the block, by inputting the decimal block number. Then use the **Record->SkipToRecord** command (F7) to view the record, by inputting the decimal record number. To continue the example given above, to view record 8360 you would first skip to block 167, then skip to record 8360.
4. Examine the values at the hexadecimal offset from the start of the record indicated by the offset value, shown in the **OFF** field. The non-standard character(s) should be presented in orange, with values equal to those presented in the **VAL** fields.

Use the Preferences Dialog Box / Printing Preferences Block to set up the Printing Preferences. Once the reports directory is setup, access the directory to locate the desired report. Open the report using Notepad or Microsoft Word or any other preferred program.

Other reports are similar to the one above. Use the Preferences Dialog Box / Printing Preferences Block to set up the Printing Preferences. Once the reports directory is setup, access the directory to locate the desired report. Open the report using Notepad or Microsoft Word or any other preferred program.

What This Chapter Contains

This chapter contains the following information:

- Compare Tape Function and the Related System Generated Report
- Performing Smart Compare and the Related System Generated Report

8 COMPARING TAPES

This section describes the Compare Tapes functions. Each function will be discussed in detail. The Compare functions include:

1. Compare Tapes;
2. Performing Smart Compare; and
3. Performing Reference Compare

8.1 Compare Tapes Function

Choosing *Copy/compare* → *Compare tapes* from the APS Job Menu as described in Section 3.1, will initiate a record-by-record comparison of two copies of the same volume. Alternatively, Compare tapes function can be accessed by pressing the  button on APS Menu Bar. This process is similar to that of making a copy, except instead of having input and output units, there are now two input tape units: the primary input and the secondary unit. This is shown in Figure 38: Compare Copies Dialog Box. The primary and secondary volume sets may have different block sizes, record formats, or character sets.

Compare will display the Open Volume and Open File dialog boxes similar to that of creating a master copy. This is described in Section 7.1. If the current file copying mode is set to "prompt for file numbers", the user will be prompted for the number of the file to compare, for both the primary and secondary input volumes. The prompt screen is shown in Figure 26: File Number Prompt.

If the files compare successfully, compare will generate a report. A row will be added to the file transaction table with file operation type 'C'[2], then the compare will continue on to the next file. A sample report of a compare job is presented in Figure 59: APS One-Line With Path Job Report.

[2] The type 'C' transaction is added only when the user performs a *Copy/compare* → *Compare tapes* operation from the APS menu. It is not added when the compare function is invoked automatically after a copy job.

```
!ARCHIVAL PRESERVATION SYSTEM (APS) ONE-LINE WITH PATH JOB REPORT  Date: 11/25/2003  Time: 10:38_
FILE OPERATION: File compared w/another copy/file
FILE OPERATION DATE: 11/25/2003                  FILE OPERATOR: SY1
FILE OPERATION REVIEW DATE: 00/00/0000           FILE OPERATION REVIEWER:
ACCESS:  Open
---------------------------------------- SPECIFICATION OF MEDIA ----------------------------------------
SPECIFICATION                    INPUT(S)                      OUTPUT(S)
FILE TYPE                        T                             M
PRESERVATION STATUS              AGENCYCOPIED                  ARCHIVESCOPY
NUMBER OF VOLUMES                1                             1
VOLUME ASSIGNED LOCATION
VOLUME BAR CODE                  11N103                        11N203
VOLUME IDENTIFIER                11N103                        11N203
MEDIA TYPE                       Hard drive                    Hard drive
MEDIA SUB-TYPE/MEDIA CAPACITY    Unknown       /Unknown        Unknown       /Unknown
LABEL TYPE                       NONE                          NONE
CREATION DATE                    2002199                       2003329

---------------------------------------- SPECIFICATION OF FILE(S) ----------------------------------------
FSEQ XMIS-# FILE-IDENTIFIER RCF/LRECL/BLKSZ/BLKFR CHARAC LRECLCOUNT BLOCKCOUNT BYTECOUNTae PRESJOB#   12345*
------------------------------------------------------------------------------------------------------------
Pathname - L:\APS Proj\Deliverables\TASK6\
0001 110103  bashref.html      U/8191 /65528/00000 ASCII  0000000082 0000000011 0000669128A     AGCOPD
0001 output  bashref.html      U/8191 /65528/00000 BINARY 0000000082 0000000011 0000669128A 2004110103 YYYYS


File/Volume Notes referring to File Master/Segment or Volume Master items:
  FXNO=110103, FNCOL=1500: block read(13848) not multiple of reclen(8191)


********************************** APS PROCESSING REPORT **********************************
Input ORIGINATING SYSTEM: AO0  Output ORIGINATING SYSTEM: 002
*1 - Number of blocks read from input file corresponds to File Label Block Count: Yes(Y) or No(N)
*2 - Number of bytes written to output file equals number read from input: Yes(Y) or No(N)
*3 - Number of bytes read from input file corresponds to Catalog File Bytes Cnt: Yes(Y) or No(N)
*4 - Number of bytes compared WITHOUT error equals number read from input: Yes(Y) or No(N)

*5 - FILE OPERATION COMPLETION CODE: Success(S) or Failed(F)

System Messages:

Error Report of Read/Write Errors and Records Deleted:

File Notes referring to File Transaction items:

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```

Figure 59: APS One-Line With Path Job Report

8.2 Performing Smart Compare

To compare tapes without invoking the database, choose *Copy/Compare* → *Smart compare* from the APS Job Menu. Alternatively, smart compare function can be accessed by pressing the  button on APS Menu Bar. This function operates in a manner similar to the Smart copy function as described in Section 7.5. Similarly to the Smart copy function the user is not prompted for bar codes or XMIS numbers, and no records are added to the database. As with the Compare tapes job, at the end of the job, APS generates a report about the Smart compare job. A sample Smart compare report is shown in Figure 60: APS One Line with Path Job Report.

```
!ARCHIVAL PRESERVATION SYSTEM (APS) ONE-LINE WITH PATH JOB REPORT  Date: 11/25/2003
Time: 11:08_
FILE OPERATION: Smart compare
---------------------------------------- SPECIFICATION OF MEDIA --------------------
----------------------
SPECIFICATION                      INPUT(S)                      OUTPUT(S)
NUMBER OF VOLUMES                  1                             1
VOLUME IDENTIFIER                  110104                        110204
MEDIA TYPE
LABEL TYPE                         NONE                          NONE
CREATION DATE                      2002199

---------------------------------------- SPECIFICATION OF FILE(S) -------------------
----------------------
FSEQ XMIS-# FILE-IDENTIFIER RCF/LRECL/BLKSZ/BLKFR CHARAC LRECLCOUNT BLOCKCOUNT
BYTECOUNTae PRESJOB#   12345*
-------------------------------------------------------------------------------------
----------------------
Pathname - L:\APS Proj\Deliverables\TASK6\
0001 000000  bashref.html      U/4    /65528/00000 ASCII  0000167282 0000000011
0000669128A
0001 output  SMCOMP            F/4    /65528/16382 ASCII  0000167282 0000000011
0000669128A            YYYYS


********************************** APS PROCESSING REPORT
**********************************
*1 - Number of blocks read from input file corresponds to File Label Block Count:
Yes(Y) or No(N)
*2 - Number of bytes written to output file equals number read from input: Yes(Y) or
No(N)
*3 - Number of bytes read from input file corresponds to Catalog File Bytes Cnt:
Yes(Y) or No(N)
*4 - Number of bytes compared WITHOUT error equals number read from input: Yes(Y) or
No(N)

*5 - FILE OPERATION COMPLETION CODE: Success(S) or Failed(F)

System Messages:

Error Report of Read/Write Errors and Records Deleted:



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```

Figure 60: APS One Line with Path Job Report

8.3 Performing Reference Compare

To compare reference copies before writing them to a CD, choose *Copy/Compare* → *Reference Compare* from the APS Job Menu. This function operates in a manner similar to the Reference Copy function as described in Section 7.6, Performing Reference Copies. APS users should not attempt to use the Reference Compare function until they are completely familiar with the Reference Copy function. There is only one difference between the control sequences for Reference Compare function and for Reference Copy function; this difference is that the user is not asked if a CD should be written at the end of the Reference Compare job.

What This Chapter Contains

This chapter contains the description of the Process of Generating Duplicate Tapes.

9 GENERATING DUPLICATE TAPES

The APS system allows for the exact duplication of a tape without any reblocking, revoluming, character set translation, record type conversion or database access. A volume is copied by simply reading each block from the input tape and writing the block to the output tape. To duplicate a tape, choose *Copy/compare* → *Duplicate tape* from the APS Job Menu, as described in Section 3.1. Alternatively, Duplicate function can be accessed by pressing the  button on APS Menu Bar. APS will prompt for Duplicate tapes setup. This setup is shown in Figure 61: Duplicate Tapes Setup.

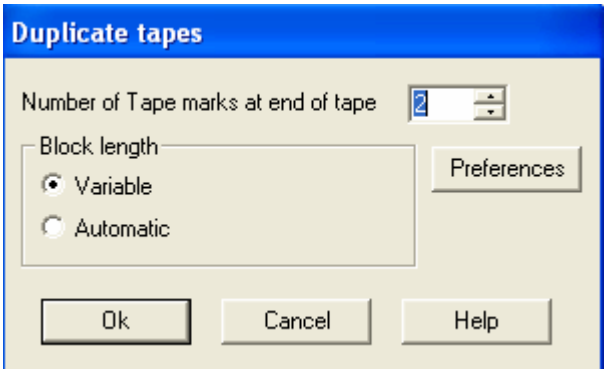


Figure 61: Duplicate Tapes Setup

1. If you do not know or are not sure if a tape has multiple blocks of similar length, or you are sure that a tape has many blocks with different length, then you should select "*Variable*"; Selecting Variable in this situation will give you the fastest and most efficient way to generate duplicate copies. By selecting Variable, you are letting the process know that it has to deal with a volume that has different size blocks, so the process does not have to slow down and readjust itself between, Automatic and Variable;
2. If you know that the tape you are duplicating contains many blocks of the same size, then you should select "*Automatic*" to let the process know that after it runs thru a user-selected number of blocks and finds out that they are the same size (this process is also referred to as Auto Block), it can assume that the rest of the volume has blocks of similar size. This will not cause data to be lost if the block sizes change, however. As the process is going thru the table, if it encounters a block of different size, it will adjust itself to Variable and continue with the copy job until it finds the user-selected number of blocks in a row that are of similar size and it returns back to Automatic. Selecting Automatic for a volume that contains similar size blocks will produce the fastest and most efficient way to generate a duplicate copy of the volume. It is recommended that you should use "*Automatic*" because in general it will produce a faster duplicate.

The number of blocks that the Automatic process goes through before it determines the expected size of blocks is set on the Environment Tab of the Preferences dialog box. The default value is 5. Refer to

Section 20.3, Environment Preferences. This dialog box shown in Figure 62: Open Unit Dialog Box for Duplicating Tapes.

Once setup is complete and the OK button is pressed, then APS will prompt for the input and output tape units without asking for bar codes.

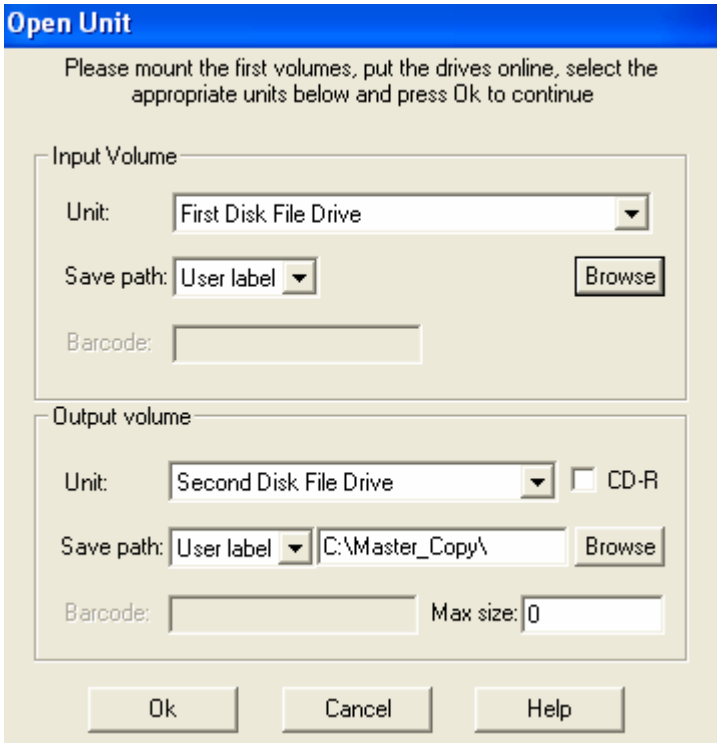


Figure 62: Open Unit Dialog Box for Duplicating Tapes

The duplication will then proceed and APS will prompt the user to enter a Disk Filename. This prompt is shown in Figure 63: Enter Disk Filename Duplicate Prompt.

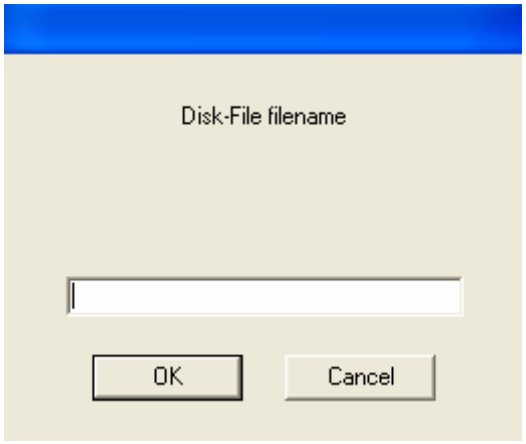


Figure 63: Enter Disk Filename Duplicate Prompt

After the duplicate is completed the Duplicate/Compare duplicate dialog box is displayed allowing the user to print a report summarizing the results of the duplicate. The "User Optional Identifier" field allows the entry of over 20 characters; however, it is recommended to enter a maximum of 20 characters because the Duplicate Tapes report will display 20 characters only. The dialog box is shown in Figure 64: Duplicate Complete Dialog Box.

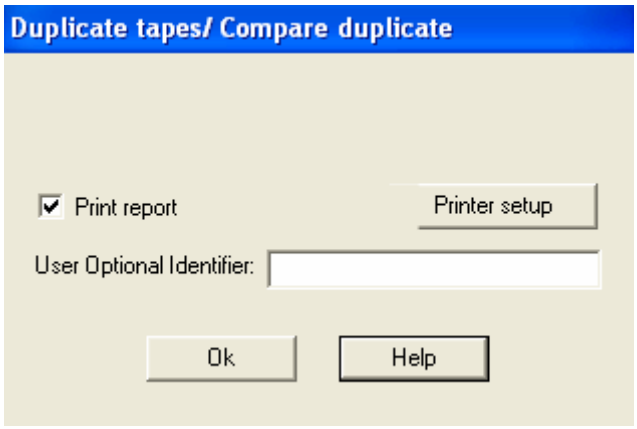


Figure 64: Duplicate Complete Dialog Box

At the end of a Duplicate job, APS generates a report showing the details of the job. A sample report is shown in Figure 65: Duplicate Tape Report.

```
!ARCHIVAL PRESERVATION SYSTEM (APS) DUPLICATE TAPE REPORT

OPERATION: Duplicate tape

DATE/TIME: 11/25/2003    11:17

APS SOFTWARE VERSION: APS 6.0.1 Jun 13 2003

USER OPTIONAL IDENTIFIER: DUP_MAST1

INPUT UNIT: First Disk File Drive

OUTPUT UNIT: First 'Tape-Image' File

NUMBER OF FILE MARKS: 2

NUMBER OF BLOCKS: 11

NUMBER OF BYTES: 669128

OPERATION COMPLETION CODE: Success

READ ERRORS ENCOUNTERED: (block numbers in this report begin with 1 instead of 0)
    NO ERRORS
TOTAL NUMBER OF HARD READ ERRORS IGNORED = 0

ELAPSED TIME = 00:00:04
Note: block numbers in this report begin with 1 instead of 0.
```

Figure 65: Duplicate Tape Report

What This Chapter Contains

This chapter contains the description of the Process of Comparing Duplicate Tapes.

10 COMPARING DUPLICATES

The APS system provides a utility to verify that two tapes contain completely identical information. This is useful for verifying that a duplication process completed successfully. No reblocking, revoluming, character set translation, record type conversion is allowed and no database access is performed. A volume is compared by simply reading blocks from the primary and secondary input tapes and verifying that they are identical. To compare duplicate tapes, choose *Copy/compare* → *Compare Duplicate* from the APS Job Menu, as described in Section 3.1, to begin the compare. Alternatively, Compare duplicate function can be accessed by pressing the  button on APS Menu Bar. Comparing Duplicates is similar to the Generate Duplicate tapes function described in Section 9. Unlike the Open Unit Dialog Box for Duplicating Tapes, Comparing tapes will display Open Unit Dialog Box with two input volumes, primary and secondary input volumes. The dialog box is shown in Figure 66: Open Unit Dialog Box for Comparing Duplicate Tapes.

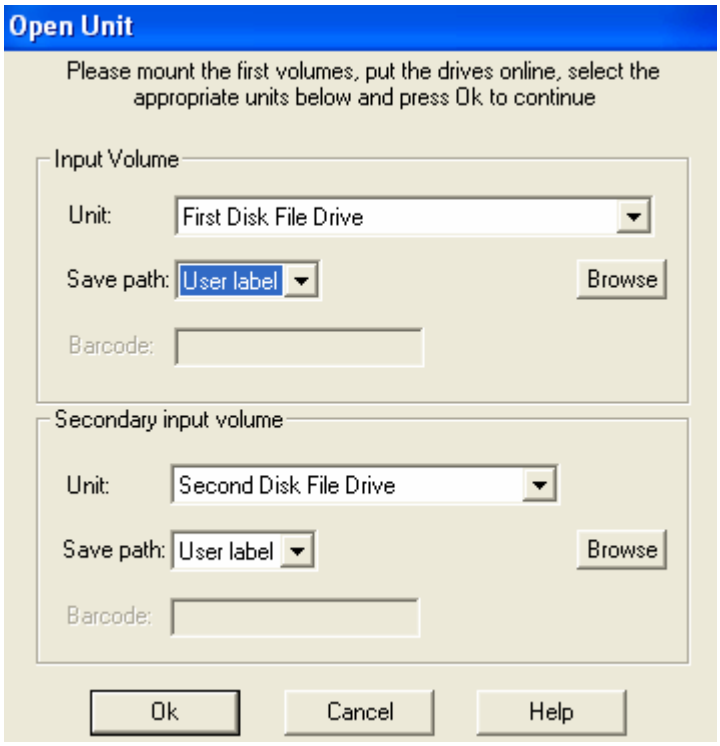


Figure 66: Open Unit Dialog Box for Comparing Duplicate Tapes

Similar to the Generate Duplicate copy job, at the end of the Compare job, APS will display the Duplicate Complete Dialog Box allowing the user to print a report summarizing the results of the duplicate.

At the end of Comparing duplicate tapes, APS generates a report showing the details of the job. A sample report is presented in Figure 67: Comparing Duplicate Tapes Report.

```
!ARCHIVAL PRESERVATION SYSTEM (APS) DUPLICATE TAPE REPORT

OPERATION: Compare duplicate

DATE/TIME: 01/10/2003    12:27

APS SOFTWARE VERSION: APS 5.21.1.0 Nov 10 2002

USER OPTIONAL IDENTIFIER:

INPUT UNIT: First Disk File Drive

OUTPUT UNIT: Second Disk File Drive

NUMBER OF FILE MARKS: 6

NUMBER OF BLOCKS: 0

NUMBER OF BYTES: 452608

OPERATION COMPLETION CODE: Success

READ ERRORS ENCOUNTERED: (block numbers in this report begin with 1 instead of 0)
    NO ERRORS
TOTAL NUMBER OF HARD READ ERRORS IGNORED = 0

ELAPSED TIME = 00:00:00

Note: block numbers in this report begin with 1 instead of 0.
```

Figure 67: Comparing Duplicate Tapes Report

What This Chapter Contains

This chapter contains the following information:

- Generating Brief Directories and the Related System Generated Reports
- Generating Verbose Directories

11 GENERATING VOLUME DIRECTORIES

This section will describe the process of generating volume directories. Two functions will be discussed:

1. Generating Brief Directory; and
2. Generating Verbose Directory.

11.1 Generating Brief Directory

The brief and verbose directory functions provide multiple purposes. In addition to providing a description of the files on a volume set, these functions can add entries to the database or to verify that current database entries are correct, they are also used for testing for the Annual Sample and to read the entire tape or file to check readability and to produce the written directory for manual review. To obtain a directory listing, choose Directory from the APS Job Menu, as described in Section 3.1, and then select either *Brief* or *Verbose* to begin the directory. Alternatively, either function can be accessed by pressing the  button for Brief Directory and  button for Verbose Directory on APS Menu Bar. APS will ask the user whether to add entries to the database verify the database or ignore the database.
Adding to the database will add file master, file segment and file transaction records while verifying to ensure that the existing records are correct. If a volume has been selected as part of the annual sample, choosing Annual sample will allow processing of the volume. The dialog screen is presented in Figure 68: Brief/Verbose Directory Dialog Screen.

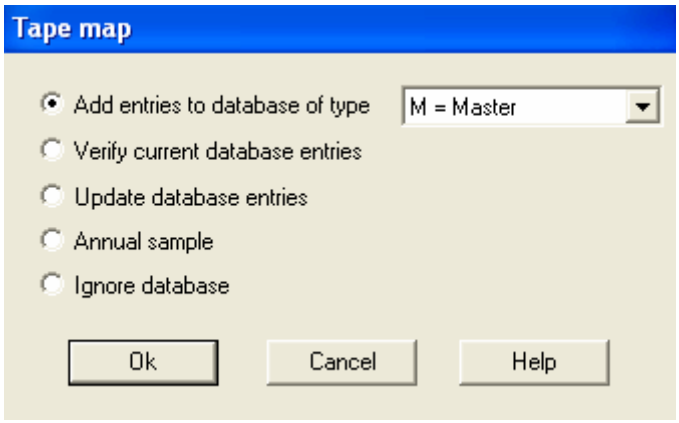


Figure 68: Brief/Verbose Directory Dialog Screen

If ‘add entries to the database’ is chosen, APS will prompt for the type of file contained on the volume set (i.e. Master, Backup, etc...). Making a selection for type of file and pressing the OK button will display the Open Unit Dialog Box. This dialog box is presented in Figure 69: Open Unit Dialog Box to Add Entry to Database.

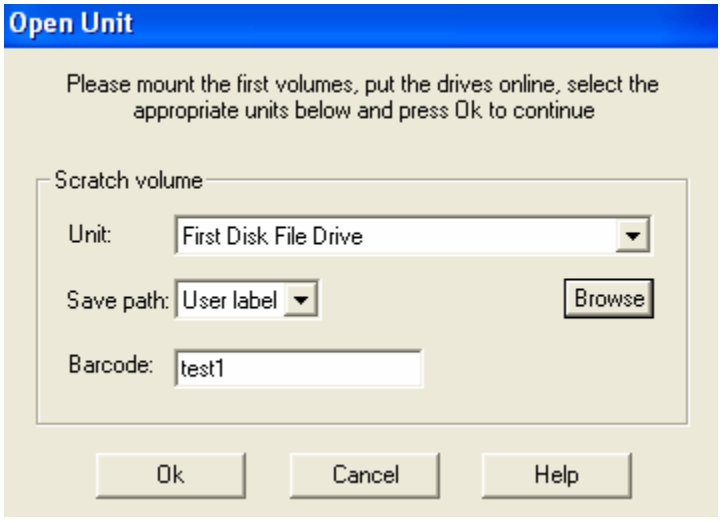


Figure 69: Open Unit Dialog Box to Add Entry to Database

In addition, when the open file dialog box is displayed the user will be required to enter the starting XMIS number for the files to be added to the database. The XMIS number will, by default, be automatically incremented after each file. The dialog box is presented in Figure 70: Open File Dialog Box to Add Entry to Database.

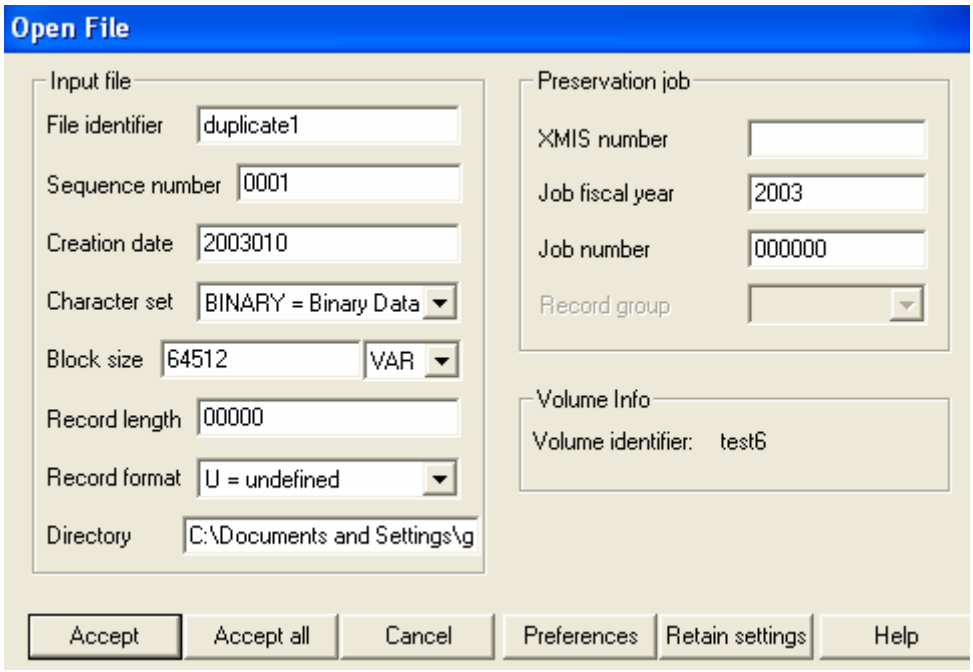


Figure 70: Open File Dialog Box to Add Entry to Database

If records already exist for the file being read (based on bar code and sequence number), the tape directory will be aborted. A file transaction with operation of 'E' (file and labels rEad) is added to the file transaction table. The message box is presented in Figure 71: File Already in Database Message Box.

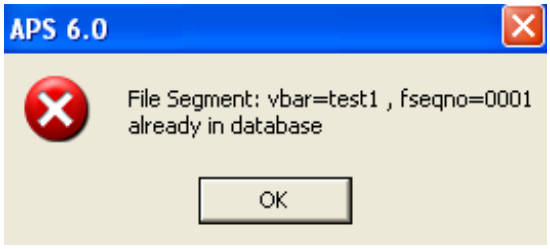


Figure 71: File Already in Database Message Box

If ‘verify current database entries’ is chosen. This message box is shown in Figure 72: Brief/Verbose Directory (Tape Map) Action Message Box.

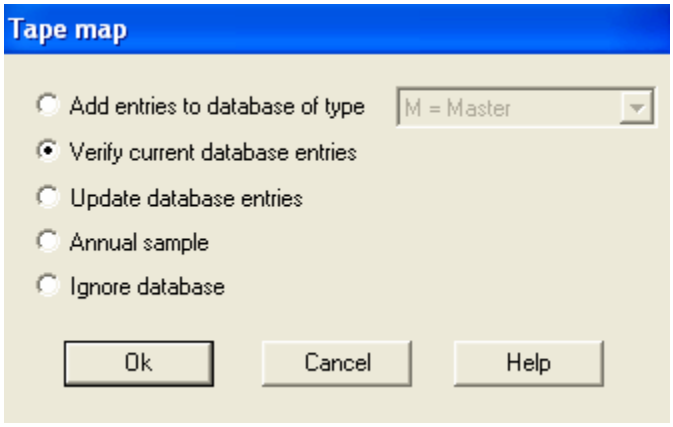


Figure 72: Brief/Verbose Directory (Tape Map) Action Message Box

APS checks if there is an entry in the File Segment table for a file with the specified bar code and current file sequence number. If entries exist, the following fields will be compared to the way the file is physically recorded on the tape:

1. File segment table: segment byte count (sbytct), segment logical record count (slrecct), segment block count (sblkct), segment unrecovered error count (surcverct), segment missing logical record count (smlrct);
2. File master table: file identifier (fid), character set (charset), record format (recfm), logical record length (lrecl), block size (blksiz), file byte count (fbytct), file logical record count (flrecct), file block count (fblkct), file recovered error count (frcverct), segment missing logical record count (smlrct); and
3. Volume master table: volume identifier (vid), label type (label).

This dialog box is shown in Figure 73: Open File Dialog Box to Verify Current Database Entries.

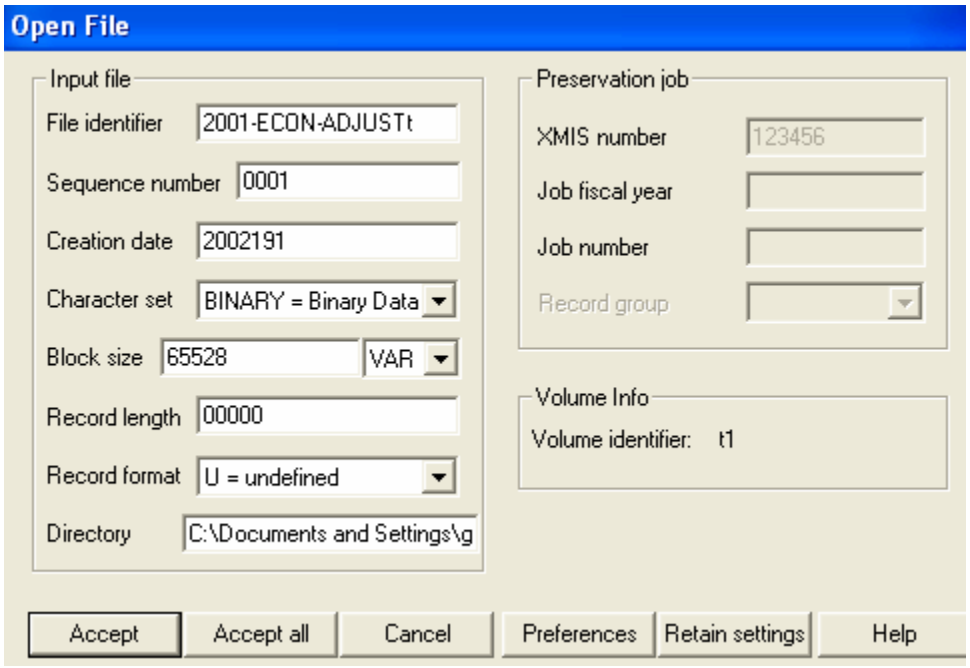


Figure 73: Open File Dialog Box to Verify Current Database Entries

Brief and Verbose directories will both read a volume set and send information about the contents of the tape(s) to the current report printer. The two functions however, differ in the amount of information included in the report. Choosing either of these functions will cause APS to prompt for the bar codes and tape drive unit of each volume. The screen will display the current cumulative volume, file, block, record and byte counts, as well as the open file dialog box when opening each file or volume. Thus, it is similar to a 'copy to nowhere'. For each file segment encountered, the brief directory will print the volume and file numbers, the volume id, file id, record number, number of blocks, records and bytes and the file's label type and character set. It will also print the actual maximum block and record lengths encountered while reading the file. The verbose tape map prints all the above information plus all standard ANSI and IBM labels encountered on the tape. During the directory the tape status is displayed on the directory status screen. This screen is presented in Figure 74: Directory Status .

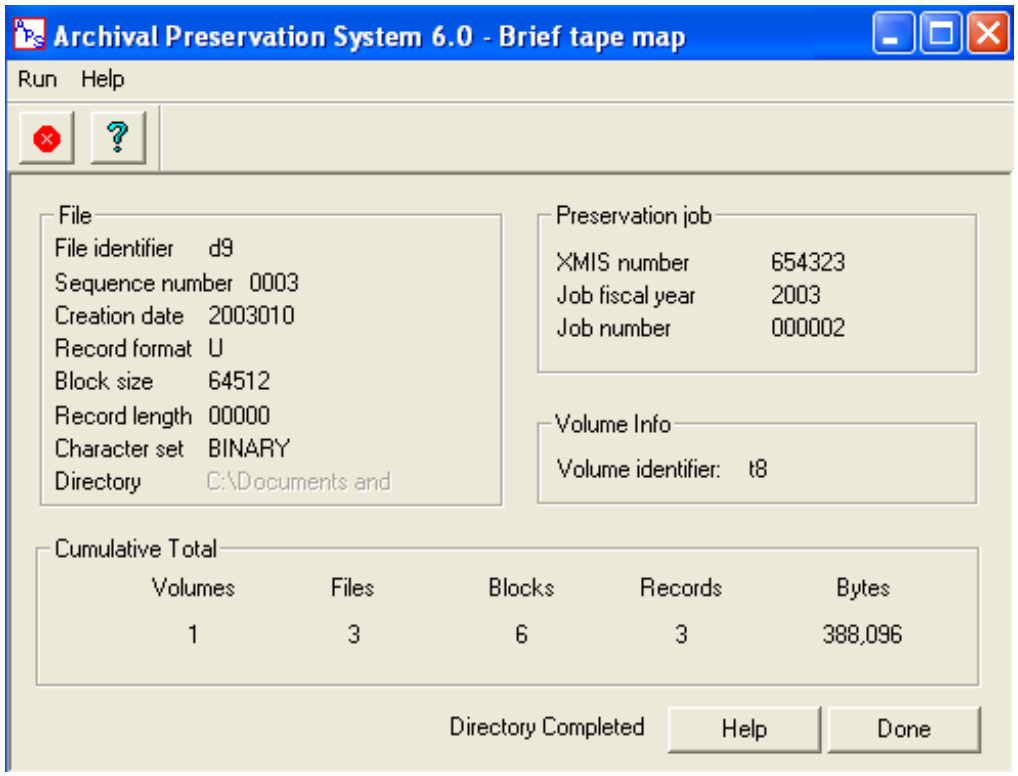


Figure 74: Directory Status Screen

At the end of generating Directories, APS will generate a report to summarize the job. A sample report is shown in Figure 75: Tape Map Report.

```
!APS BRIEF TAPE MAP REPORT  Date: 01/10/2003   Time: 13:49

Volume: 1, Volume ID: t8, File: 1, File ID: d4, Segment: 1
1 Blocks, 1 Records, 64512 Bytes
LABEL TYPE = NONE,  CHARACTER SET = BINARY
max. blk len = 64512, max. rec. len = 64512

Volume: 1, Volume ID: t8, File: 2, File ID: d5, Segment: 1
4 Blocks, 1 Records, 259072 Bytes
LABEL TYPE = NONE,  CHARACTER SET = BINARY
```

```
max. blk len = 65528, max. rec. len = 65528

Volume: 1, Volume ID: t8, File: 3, File ID: d9, Segment: 1
1 Blocks, 1 Records, 64512 Bytes
LABEL TYPE = NONE,  CHARACTER SET = BINARY
max. blk len = 64512, max. rec. len = 64512

Total files = 3, bytes = 388096
```

Figure 75: Tape Map Report

11.2 Generating Verbose Directory

The procedures for generating Verbose Directory are similar to those for generating a Brief Directory, as described in Section 11.1 above. An example of a verbose tape report is presented in Figure 76: Verbose Tape Map Report.

```
!APS  *** VERBOSE TAPE MAP REPORT ***    Date: 04/01/2004    Time: 10:43 _

Vol: 1, Vol ID: pow003, Loc: , File: 1, File ID: POW.MERGED       , Segment: 1
1434 Blocks, 143374 Records, 11469920 Bytes
LABEL TYPE = ANSI,  CHARACTER SET = ASCII
max. blk len = 8000, max. rec. len = 80

ANSI HDR1 LABEL FILE ID: POW.MERGED
FILE SET ID: pow003
FILE SECT #: 0001
FILE SEQ #: 0001
GEN #: 0001
GEN VER: 00
CREATED: 003177
EXPIRES: 099365
FILE ACCESS:
BLOCK COUNT: 000000
IMPLEMENT ID: APS
RSRVD:

ANSI HDR2 LABEL REC FORMAT: F
BLK LEN: 08000
REC LEN: 00080
RSRVD: :
OFFSET LEN: 00
RSRVD:
:

ANSI EOF1 LABEL FILE ID: POW.MERGED
FILE SET ID: pow003
FILE SECT #: 0001
FILE SEQ #: 0001
GEN #: 0001
GEN VER: 00
CREATED: 003177
EXPIRES: 099365
FILE ACCESS:
```

```
BLOCK COUNT: 001434
IMPLEMENT ID: APS
RSRVD:

ANSI EOF2 LABEL REC FORMAT: F
BLK LEN: 08000
REC LEN: 00080
RSRVD: :
OFFSET LEN: 00
RSRVD:
:


Total files = 1, bytes = 11469920
```

Figure 76: Verbose Tape Map Report

What This Chapter Contains

This chapter contains the following information:

- Performing Simple Dump and Related System Generated Report
- Performing Smart Dump

12 DUMP FUNCTIONS

This section will cover the Dump functions. Two functions will be discussed:

1. Performing Simple Dump; and
2. Performing Smart Dump.

12.1 Simple Dump

To view the contents of a tape, load a tape in the appropriate drive and choose *Dump* → *Simple Dump* from the APS Job menu, as described in Section 3.1. Alternatively, users can access the Dump function by clicking on the  button on APS Menu Bar. The tape dump utility will then present the open unit dialog box to prompt the user for the scratch unit containing the tape to be dumped. The dialog box is shown in Figure 77: Open Unit Dialog Box for Dump Function.

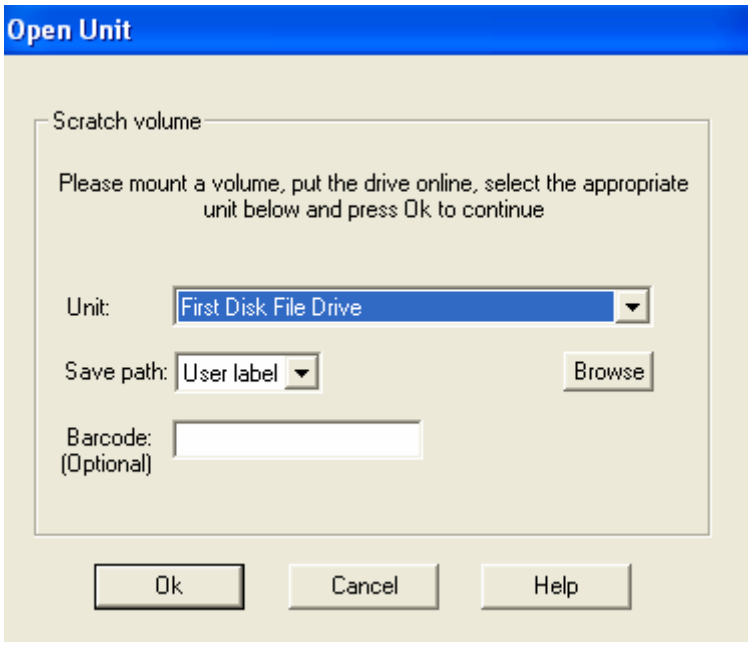


Figure 77: Open Unit Dialog Box for Dump Function

After the user selects the appropriate drive, APS will enter dump mode and display the first block of the tape. The dump file list is shown in Figure 78: Simple Dump File List.

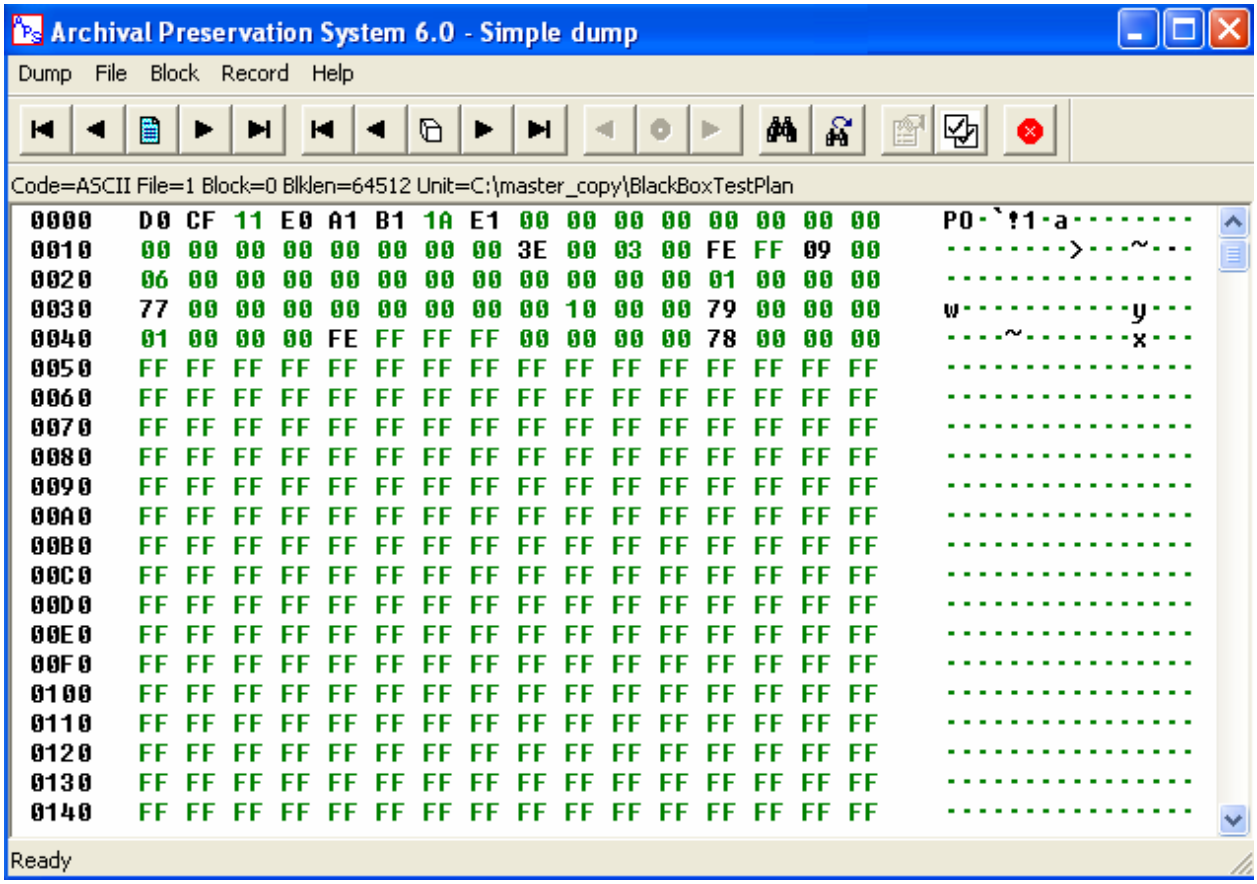


Figure 78: Simple Dump File List

The block data is displayed on the right of the screen, while the address (offset from start of block) is to the far left. The block data is displayed both in the center column in binary format (HEX or OCTAL base) and in the right column in text format (ASCII or EBCDIC). All characters that cannot be displayed as ASCII or EBCDIC will be represented as a dot (·) in the text format column. The default format is to display HEX on the left portion of the screen and either ASCII or EBCDIC, as appropriate, on the right portion of the screen. If the block currently displayed is a standard IBM or ANSI label the label information is displayed below the block. If the block is too large to fit on the screen only a portion of the block is displayed. To view the rest of the block you can scroll one line up or down using either, the mouse and the scroll bar, or using the cursor, page up/down and home/end keys. A title line is displayed at the top of the screen to display the current tape unit and the character set being displayed. The title line also displays the current file number (1 is the first on the volume), current block number (0 is first in file) and the length of the block. The tape can be positioned by using the hotkeys, the menu or the button bar.

The following functions are available in the dump utility:

1. Next block: Reads the next block on the tape and displays it on the screen. If a file mark is read a message indicating the condition is displayed. At the logical end of tape a message will be displayed and APS will not read additional blocks from the tape. The hotkey for this function is F3.

2. Skip file: Positions tape at the first block of a particular file number. The user will be prompted to specify the number of the file to skip to, with one representing the first file on the volume. Entering zero will rewind the tape, and entering a number past the logical end of tape will advance to the last file. The hotkey for this function is F5.

3. Skip block: Positions tape at a particular block within the current file. The user will be prompted to specify the number of the block to skip to, with zero representing the first block in the file. Entering a number past the end of the file (tape mark) will advance to the last block. The hotkey for this function is F6.
4. Print block: Dumps block data to the report printer. APS will display the Dump print dialog box to prompt for the number of blocks to dump (starting from the current block). The data will be sent to the printer in the same format as it is displayed on the screen in dump mode, with the current display options. APS will not dump blocks past the end of the file (tape mark). Each block will be preceded by a title line identifying the file and block number of the block. The report will be paginated with a title line and date appearing at the top of each page. A footer specifying the classification level of the file can optionally be printed at the bottom of each page. The hotkey for this function is F9. A sample Simple Dump Report is shown in Figure 79: Simple Dump Report.

```
!Classification Level: Unclassified
!APS BLOCK DUMP        Date: 01/13/2003   Time:  9:26

FILE #1  BLOCK # 0
0000 D0 CF 11*E0 A1 B1 1A*E1 00*00*00*00*00*00*00*00*   PO `!1 a
0010 00*00*00*00*00*00*00*00*3E 00*03*00*FE FF*09 00*           >   ~
0020 06*00*00*00*00*00*00*00*00*00*00*00*01*00*00*00*
0030 77 00*00*00*00*00*00*00*00*10*00*00*79 00*00*00*   w           y
0040 01*00*00*00*FE FF*FF*FF*00*00*00*00*78 00*00*00*       ~       x
0050 FF*FF*FF*FF*FF*FF*FF*FF*FF*FF*FF*FF*FF*FF*FF*FF*
0060 FF*FF*FF*FF*FF*FF*FF*FF*FF*FF*FF*FF*FF*FF*FF*FF*
0070 FF*FF*FF*FF*FF*FF*FF*FF*FF*FF*FF*FF*FF*FF*FF*FF*
|
|
|
|
0280 00*00*00*00*FF*FF*0F*00*00*00*00*00*00*00*00*00*
0290 00*00*00*00*00*00*00*00*88*00*00*00*00*00*16*09
02A0 00*00*00*00*00*00*16*09 00*00*16*09 00*00*00*00*
02B0 00*00*16*09 00*00*00*00*00*00*16*09 00*00*00*00*
02C0 00*00*16*09 00*00*00*00*00*00*16*09 00*00*34 00*                4
02D0 00*00*00*00*00*00*00*00*00*4A 09 00*00*00*00*             J
|
|
|
0A00 41 50 53 20 42 6C 61 63 6B 2D 42 6F 78 20 54 65    APS Black-Box Te
0A10 73 74 20 50 6C 61 6E 0D 0D 0C 13*20 54 4F 43 20    st Plan     TOC
0A20 5C 6F 20 22 31 2D 31 22 20 14*31 2E 09 49 6E 74    \o "1-1"  1. Int
0A30 72 6F 64 75 63 74 69 6F 6E 09 13*20 50 41 47 45    roduction   PAGE
0A40 52 45 46 20 5F 54 6F 63 32 32 31 31 32 39 31 36    REF _Toc22112916
0A50 20 5C 68 20 01*14*31 15*0D 32 2E 09 55 73 65 72     \h   1  2. User
0A60 20 41 64 6D 69 6E 69 73 74 72 61 74 69 6F 6E 20     Administration
0A70 54 65 73 74 73 09 13*20 50 41 47 45 52 45 46 20    Tests   PAGEREF
0A80 5F 54 6F 63 32 32 31 31 32 39 31 37 20 5C 68 20    _Toc22112917 \h
!This information is derived from electronic information containing national
!security classified information classified at the Unclassified level based on
!derivative classification authority assigned to Bruce I. Ambacher.
!This information was printed on 01/13/2003.
```

Figure 79: Simple Dump Report

5. Run a script: Automates the dump printing process. Allows the use of a script file to specify which blocks to print in an unattended mode. Scripts are of type '.SCP' Script Connection Procedure.
6. Preferences: Allows the user to alter or display the current dump mode options via the dump preferences dialog box. The hotkey used to display the dump preferences dialog box is F2. The dialog box is shown in Figure 80: Dump Preferences Dialog Box.

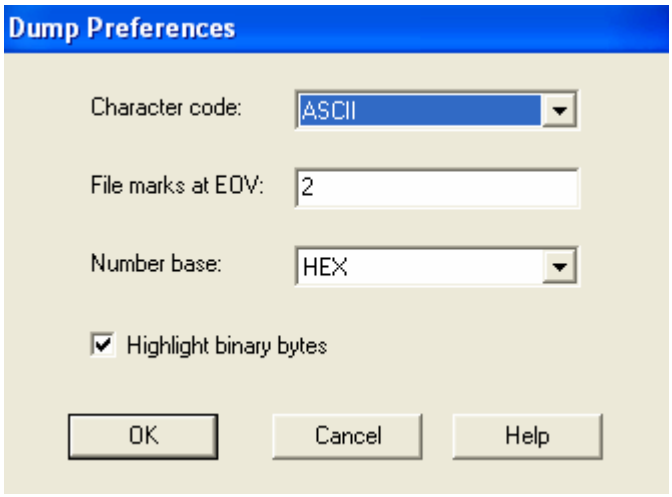


Figure 80: Dump Preferences Dialog Box

7. Help: Invokes the Windows help utility to provide detailed information explaining how to use the dump utility. The hotkey for this function is F1.

12.2 Smart Dump

Smart tape dump is essentially a superset of tape dump. It performs all the above functions but also interprets ANSI and IBM standard labels, allowing it to perform record-level functions. To enter smart mode, choose *Dump* → *Smart Dump* from the APS Job menu, as described in Section 3.1. Alternatively, users can access the Smart Dump function by clicking on the  button on APS Menu Bar. Similar to Simple Dump discussed above, Smart Dump displays the Open Unit Dialog Box for Dump Function.

In addition to the information displayed on the title line in dump mode, in smart dump mode the title line also displays the current record number (0 is the first in the file) and the record length. When dumping a block that is part of the label some functions are inapplicable and are therefore are unavailable (e.g. next record), however, all other functions are available. When dumping blocks that are parts of a file (not a label) all the functions available in dump mode are available, although, some of them may be a bit slow due to the fact that APS must maintain a proper record count. (If the tape drive seems to be advancing or rewinding unnecessarily, be patient it will return to the correct position). In addition to the dump mode functions, the following functions are available in smart dump mode:

1. Skip record: Positions dump at a particular record within the current block. The user will be prompted to specify the number of the record to skip to, with zero representing the first record in

the file. Entering a number past the beginning of the block will advance to the first record in the block and entering a number past the end of the block will advance to the last record. The hotkey for this function is F7.

2. Print record: Dumps record data to the current report printer. APS will display the Dump print dialog box to prompt for the number of records to dump (starting from the current record). The data will be sent to the printer in the same format as it is displayed on the screen in dump mode, with the current display options. Each record will be preceded by a line identifying the file, block and record number of the record. The report will be paginated with a title line and date appearing at the top of each page. A footer specifying the classification level of the file can optionally be printed at the bottom of each page. The hotkey for this function is F11.
3. File Properties: Displays the Open File Dialog Box to allow viewing/modifying the file properties. These properties include the record format and length. If the tape is an unlabeled tape, this dialog box is automatically displayed before opening the file to allow the user to set these properties. The hotkey for this function is F4.

Note: if you attempt to use Smart Dump to dump a tape that does not have a label you will receive a message informing you that Smart Dump cannot be used, you must use Simple Dump. The message box is shown in Figure 81: Smart Dump Information Message.

Figure 81: Smart Dump Information Message

What This Chapter Contains

This chapter contains the following information:

- Simple/Smart Merge Functions and Related System Generated Reports

13 TAPE MERGE FUNCTIONS

This utility can be used to simultaneously to open multiple input units and to selectively read from each of them while copying blocks to an output tape. There are two versions of the merge utility, Simple Merge and Smart Merge.

Simple Merge allows data from multiple input tapes to be combined on one output tape. The data is manipulated on a low level with no knowledge of records or labels. Labels are treated as any other file.

Smart merge is similar to Simple Merge except that the data is manipulated on a higher level allowing for the manipulation and combination of record level data. All smart copy type functions can be performed. Records can be converted from one record type to another, and character set conversions can be performed. Reference Section 7.5

To invoke the merge utility, choose *Tape Merge* → *Simple Merge* or *Tape Merge* → *Smart Merge* from the APS Job menu to display the APS tape merge dialog box, as described in Section 3.1. Alternatively, Simple Merge can be accessed by pressing the  button on the APS Menu Bar, and Smart Merge can be accessed by pressing the  button on the APS Menu Bar. The Simple Tape Merge dialog box is shown in Figure 82: Simple Tape Merge Dialog Box. The Smart Tape Merge dialog box is shown in Figure 83: Smart Tape Merge Dialog Box.

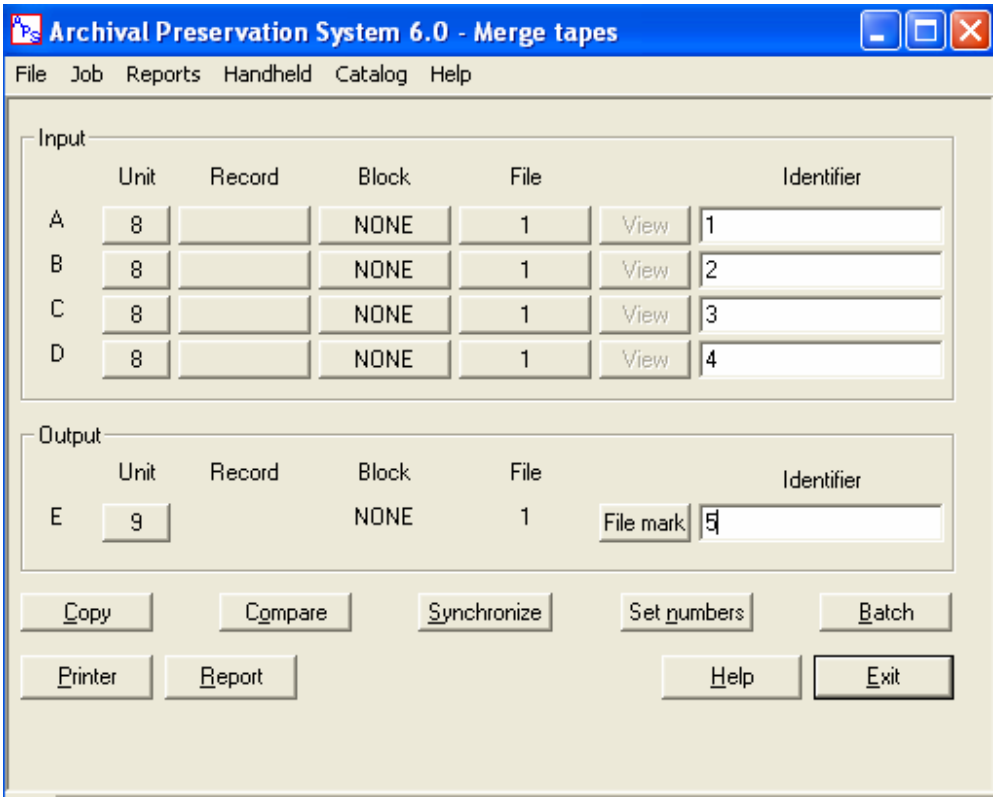


Figure 82: Simple Tape Merge Dialog Box

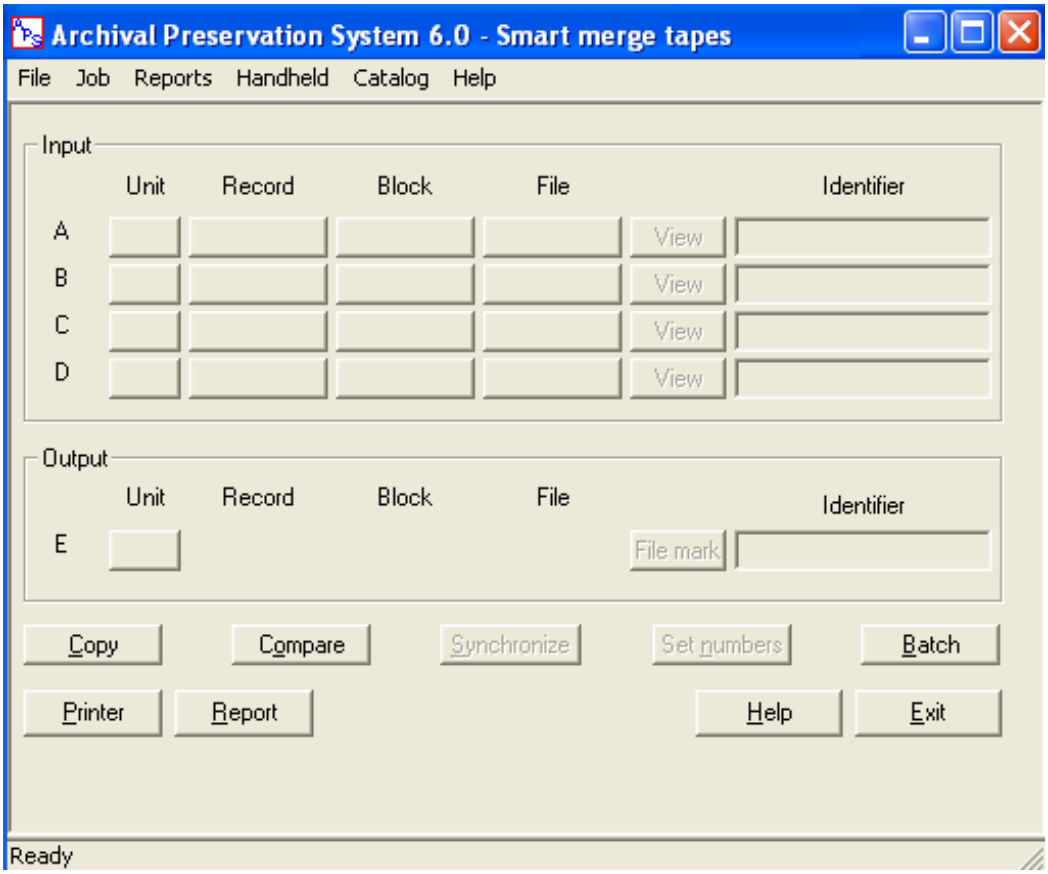


Figure 83: Smart Tape Merge Dialog Box

The APS Tape Merge dialog box uses buttons both to receive input from the user as well as to display current unit status. Thus, when a tape unit is allocated, the unit button for that unit displays the current unit number, the block button displays the current block number and the file button displays the current file number. The merge utility allows for up to four simultaneous input units, labeled A-D, and one output unit, labeled E.

The following operations can be performed:

1. Allocate (open) input unit: To allocate an unallocated unit, press the button in the unit column that is on the row of the unit to be allocated under the Input Block. APS will present the open unit dialog box to allow the user to select a tape unit and then allocate the unit. The dialog box is shown in Figure 84: Open Unit Dialog Box/Input for Tape Merge.

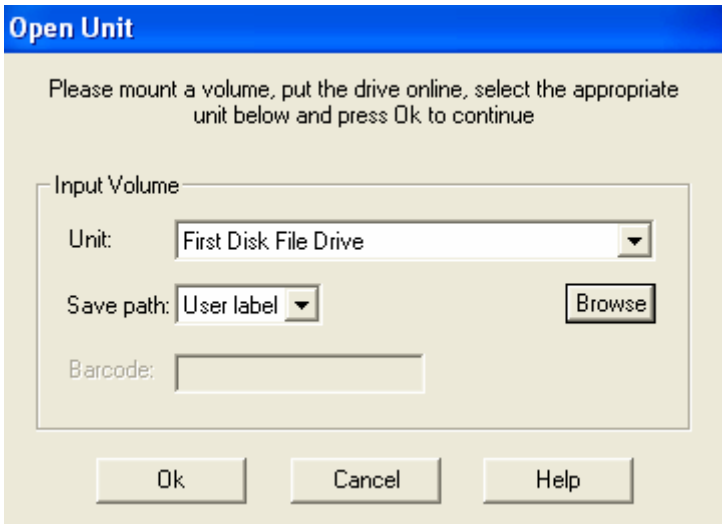


Figure 84: Open Unit Dialog Box/Input for Tape Merge

2. De-allocate (close) unit: To de-allocate an allocated unit, press the button in the unit column that is on the row of the unit to be de-allocated. APS will verify that the user intends to de-allocate the unit and then de-allocate it. The Close Unit box is shown in Figure 85: APS confirming De-Allocate Unit.

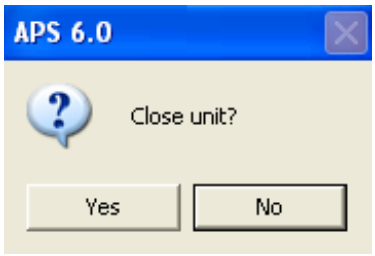


Figure 85: APS confirming De-Allocate Unit

3. Allocate (open) output unit: To allocate an unallocated unit, press the button in the unit column that is on the row of the unit to be allocated under the Output Block. APS will present the open unit dialog box to allow the user to select a tape unit and then allocate the unit. The dialog box is shown in Figure 86: Open Unit Dialog Box/Output for Tape Merge.

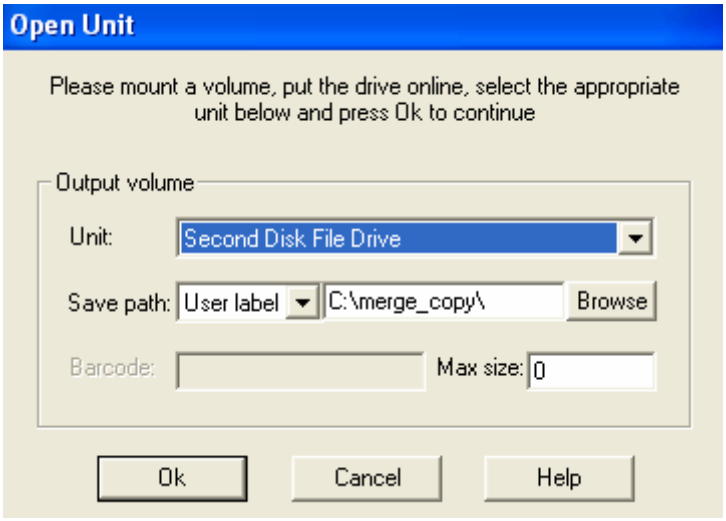


Figure 86: Open Unit Dialog Box/Output for Tape Merge

4. Skip record (smart mode only): To position an input tape unit at a particular record within the current file, press the button in the block column that is on the row of the unit to be positioned. APS will prompt the user for the number of the record to position at and then perform the task. This prompt is shown in Figure 87: Record Number selection for Smart Merge.

Figure 87: Record Number selection for Smart Merge

5. Skip block: To position an input tape unit at a particular block within the current file, press the button in the block column that is on the row of the unit to be positioned. APS will prompt the user for the number of the block to position at and then perform the task. This prompt is shown in Figure 88: Block Number selection for Tape Merge.

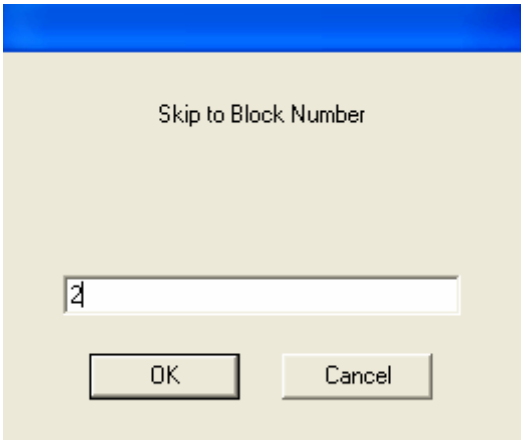


Figure 88: Block Number selection for Tape Merge

6. Skip file: To position an input tape unit at a particular file, press the button in the file column that is on the row of the unit to be positioned. APS will prompt the user for the number of the file to position at and then position the tape at the beginning of that file. To rewind the tape, skip to file 0. This prompt is shown in Figure 89: File Number selection for Tape Merge.

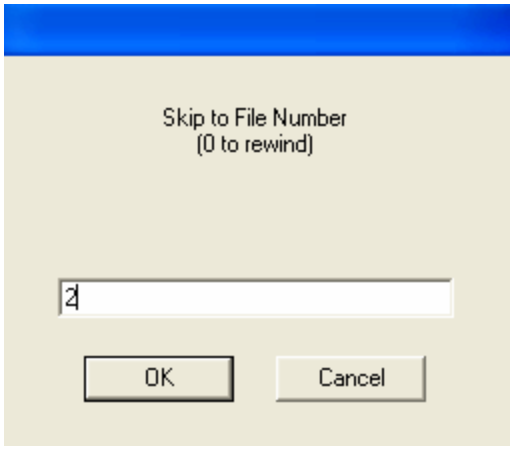


Figure 89: File Number selection for Tape Merge

7. View tape: To view the contents of an input tape unit, press the button labeled View that is on the row of the unit to be viewed. APS will open a tape dump window allowing the user to view and reposition that tape unit. This window is shown in Figure 90: Tape Merge View Option.

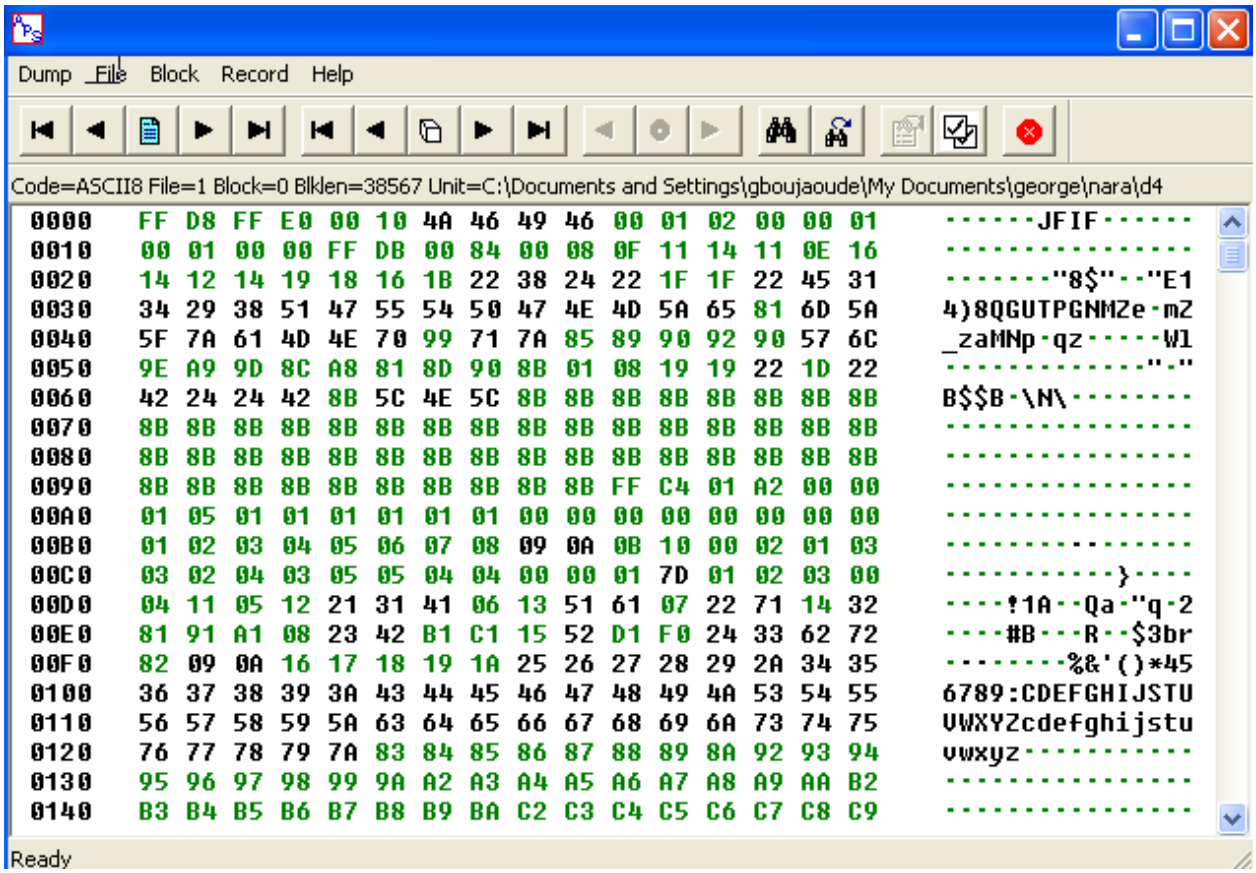


Figure 90: Tape Merge View Option

8. Write file mark: To write a file mark at the current location of the output unit press the button labeled File mark that is on the row of the output unit.

Copy Blocks/Files: To copy a range of records/blocks or files from an input unit to the output unit, press the button labeled Copy. APS will present the merge block copy/compare dialog box to prompt for the starting and ending position and then begin copying the data. The dialog box to copy blocks is shown in Figure 91: Tape Merge - Copy Blocks Dialog Box and the dialog box to copy files is shown in Figure 92: Tape Merge - Copy Files Dialog Box.

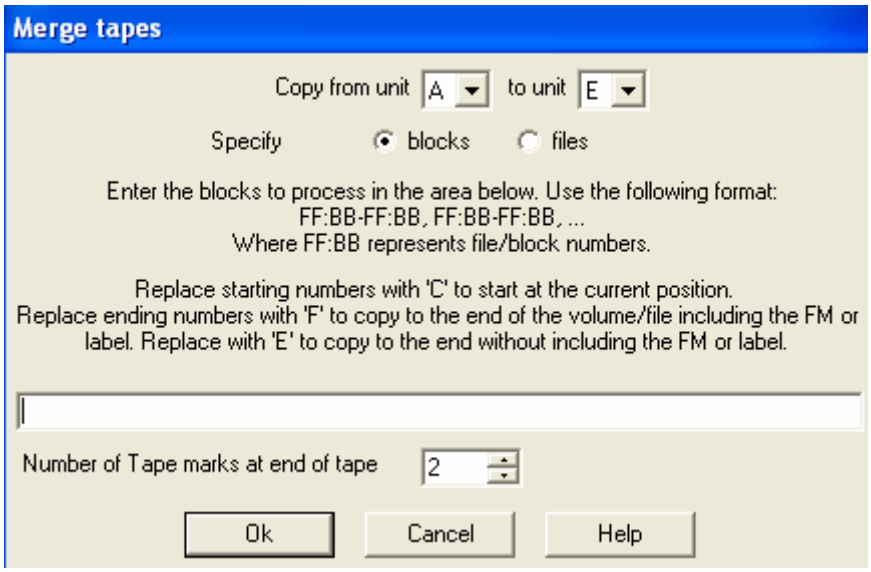
9. 

Figure 91: Tape Merge - Copy Blocks Dialog Box

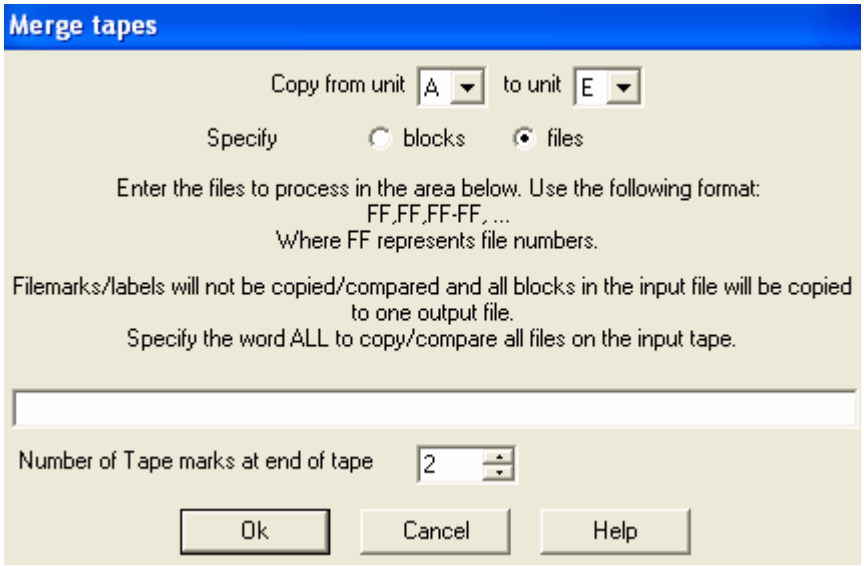


Figure 92: Tape Merge - Copy Files Dialog Box

Once selection is made and the Ok button pressed, APS will display two messages. One to confirm reaching the end of tape and the other to confirm copying was successful. The end of tape confirmation message is shown in Figure 93: Tape Merge/Copy reached End of Media. The copying was successful confirmation is shown in Figure 94: Tape Merge/Copy Completed.

Figure 93: Tape Merge/Copy reached End of Media

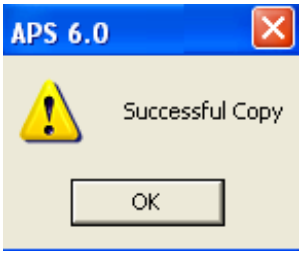


Figure 94: Tape Merge/Copy Completed

10. Compare Blocks/Files: To compare a range of records/blocks or files from an input unit another input unit, press the button labeled Compare. This unit will be the primary input unit. APS will present the merge block copy/compare dialog box to prompt for the starting and ending positions and then begin comparing the data. The dialog box is shown in Figure 95: Tape Merge Compare Dialog Box.

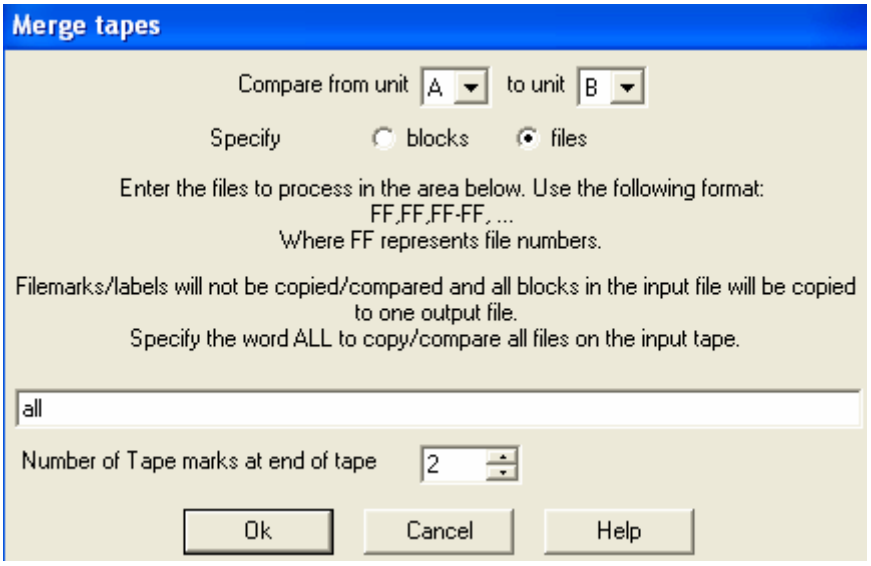


Figure 95: Tape Merge Compare Dialog Box

Synchronize tapes (not available in smart mode): To compare two 'identical' tapes which may be missing blocks or file marks, press the button labeled Synchronize. APS will present the merge synchronize dialog box to prompt for the two input units and the maximum number of blocks to search when a mismatch occurs. Figure 96: Merge Synchronize Dialog Box. APS will then read blocks from each of the two input units and verify that they contain identical data. If a mismatch occurs APS will first read up to a number of blocks (specified in the dialog box) ahead on the primary input drive and compare each one to the current block on the secondary unit in search of a matching block. If it doesn't find a match it will read ahead on the secondary drive and compare each block to the current block on the primary drive. If no match is found, APS will then assume that each of these blocks is missing on the other tape and will go on to the next block on both tapes. If no match is found within a number of blocks (the same number specified before) the synchronization will fail. A message box will display is the synchronization is successful as shown in Figure 97: Synchronization Successful Message Box.

11. This is unlikely to occur unless very different tapes were mounted. APS can optionally search for mismatched blocks by rereading previously read blocks. This is useful for identifying duplicated blocks.

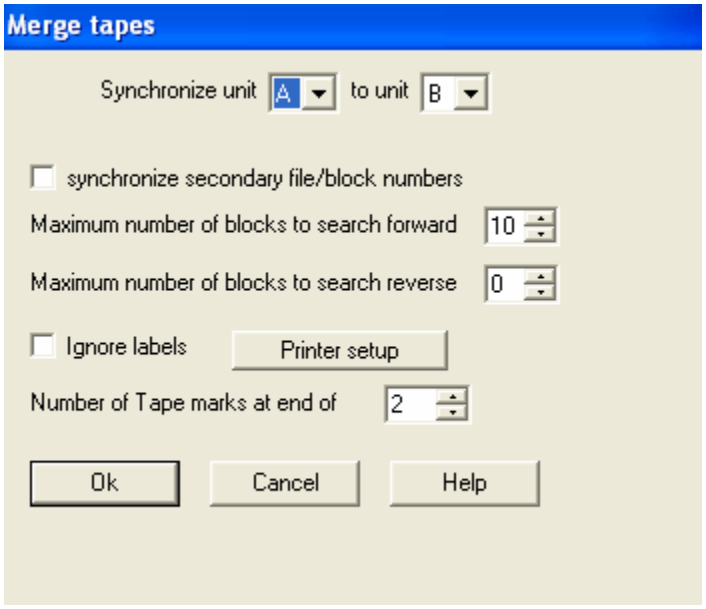


Figure 96: Merge Synchronize Dialog Box

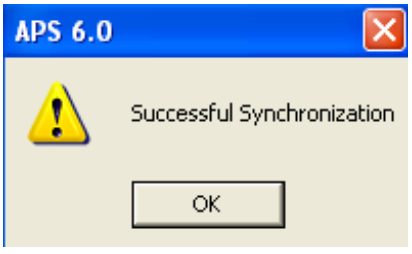


Figure 97: Synchronization Successful Message Box

- At the end of the synchronization, APS generates a detailed report describing which blocks are contained on both tapes, which are missing on each of the tapes, and which blocks correspond to each other on each tape. A sample of a Merge Synchronization Report is shown in Figure 98: Merge Synchronization Report.

```
Page 1 Merge Synchronization Report
Unit 10 File/block Unit 11 File/block
1/0 -> 2/2 1/0 -> 2/2
( 2 blocks missing) 2/3 -> 2/4
2/3 -> 2/18 2/5 -> 2/20
( 1 blocks missing) 2/21 -> 2/21
2/19 -> 2/19 2/22 -> 2/22
( 1 blocks missing) 2/23 -> 2/23
2/20 -> 2/20 2/24 -> 2/FM
( 0 blks, 1 FMs missing) FM
2/21 -> 2/22 ( 2 blocks missing)
2/23 -> EOT 4/0 -> EOT
```

Figure 98: Merge Synchronization Report

- This report indicates that the first tape was missing two blocks after the second block of the second file, one block after the 18th block and one after the 19th block. It was also missing a file (tape) mark after the 20th block. The second tape was complete except for two missing blocks after the third file mark. Assuming that these two tapes are both copies of the same original tape, these tapes can be combined to produce one complete tape using the merge copy procedure to copy the appropriate blocks to an output unit. In this situation, the easiest way to do that would be to:
    1. Copy from the beginning of tape through the end of the second file from the second tape.
    2. Copy from file 2; block 21 on the first tape through the end of tape.

12. Generate Report: To print a report summarizing all actions performed during this merge session, (since the last report was printed), press the button labeled Report. This report includes two lines for each action that has been performed. The first line describes the function, and the position of input and output units before the action was performed. The second line describes the position of input and output units after the action was performed, and whether the function succeeded or failed. Synchronize commands are not included in this report because they generate their own report. A blank line is left between actions. A sample of the Merge Report is shown in Figure 99: Merge Report.

```
!ARCHIVAL PRESERVATION SYSTEM (APS) MERGE REPORT     Date: 01/13/2003    Time:
11:54
```

```
!FUNCTION INPUT UNIT  FILE BLOCK     OUTPUT/SECONDARY UNIT   FILE BLOCK STAT
WRT FMK                              09(5                 )  0001 00000000
                                     09(5                 )  0001 00000000 S

COPY     08(1       )  0001 00000000  09(5                 )  0002 00000000
         08(1       )  0001 00000001  09(5                 )  0002 00000000 S

COPY     08(1       )  0002 00000000  09(5                 )  0002 00000001
         08(1       )  0002 00000001  09(5                 )  0002 00000001 S

COPY     08(1       )  0003 00000000  09(5                 )  0002 00000002
         08(1       )  0003 00000001  09(5                 )  0002 00000002 S

COPY     08(1       )  0004 00000000  09(5                 )  0002 00000003
         08(1       )  0004 00000001  09(5                 )  0002 00000003 S

COPY     08(1       )  0005 00000000  09(5                 )  0002 00000004
         08(1       )  0005 00000000  09(5                 )  0002 00000003 S

COPY     08(1       )  0001 00000000  09(5                 )  0002 00000004
         08(1       )  0001 00000001  09(5                 )  0002 00000004 S

COPY     08(1       )  0002 00000000  09(5                 )  0002 00000005
         08(1       )  0002 00000001  09(5                 )  0002 00000005 S

COPY     08(1       )  0003 00000000  09(5                 )  0002 00000006
         08(1       )  0003 00000001  09(5                 )  0002 00000006 S

COPY     08(1       )  0004 00000000  09(5                 )  0002 00000007
         08(1       )  0004 00000001  09(5                 )  0002 00000007 S

COPY     08(1       )  0005 00000000  09(5                 )  0002 00000008
         08(1       )  0005 00000000  09(5                 )  0002 00000007 S

         08(1       )  0001 00000000  08(2                 )  0000 00000000 F

         08(4       )  0001 00000000  08(2                 )  0000 00000000 F

SYNC     08(1       )  0001 00000001  08(2                 )  0001 00000000
```

Figure 99: Merge Report

13. Run batch of commands: A series of merge commands can be specified in a file and run without user intervention. Pressing the Batch button will display a window to select batches. The window is shown in Figure 100: Batch Selection Display.

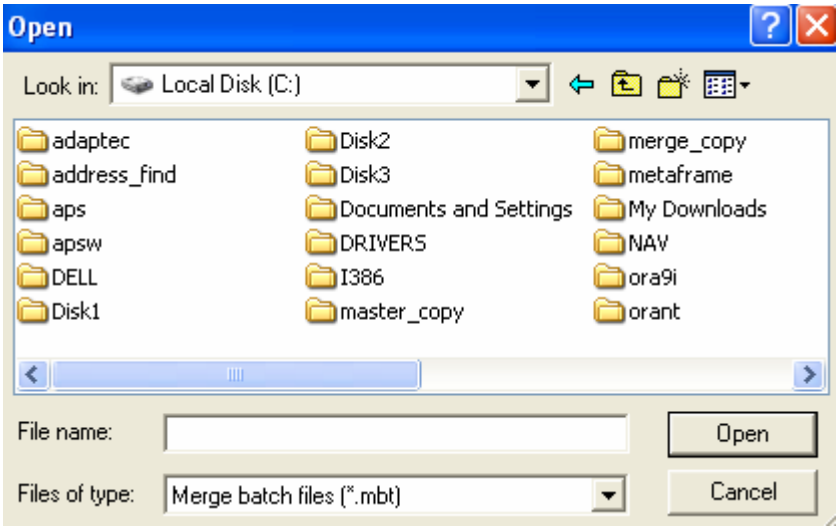


Figure 100: Batch Selection Display

14. Set Printer: To configure printer settings for reports press the Printer button. The Printing Setup dialog box is shown in Figure 101: Printing Setup Dialog Box.

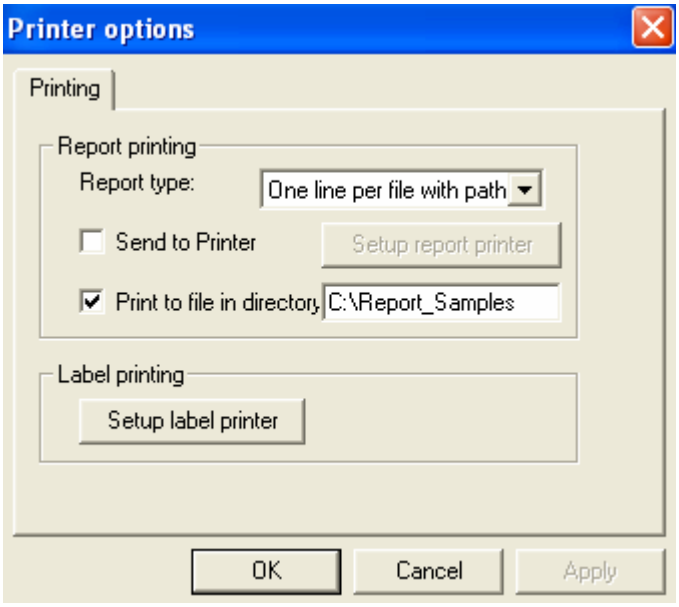


Figure 101: Printing Setup Dialog Box

15. Set File and block numbers (not available in smart mode): This allows the user to key in the current file and block numbers via the change file/block number dialog box (does not reposition the tape). This is helpful when a tape fragment (a copy of a segment of an original tape) is loaded. To access this utility, press the Set Numbers button. The Set Numbers dialog box is shown in Figure 102: Set Numbers Dialog Box.

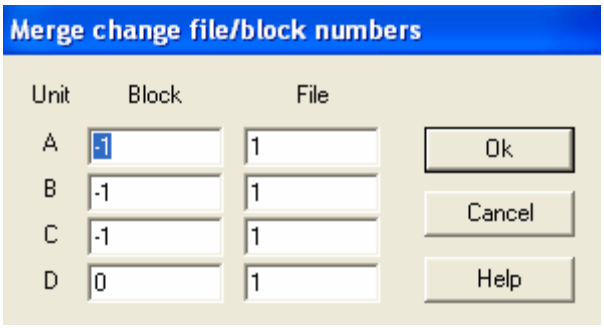


Figure 102: Set Numbers Dialog Box

16. User optional identifiers: Each tape unit has an optional identifier field associated it with it. This field is displayed on the screen and included in reports to help identify the tape. The user may enter any alphanumeric string in this field (only the first 27 characters will be printed in reports).
17. Help: Press the Help button to obtain help describing the merge utility.
18. Quit: Press the Exit button to exit the merge utility.

To make Tape Merge more understandable we included a Tape Merge Procedure example.

Sample Merge Procedure

In normal operation of APS the merge utility will be used when two copies of the same volume exist, each with an error in a different location. It will be necessary to merge the two tapes to obtain one complete tape. For the following example, we will choose a volume containing two OS labeled files. The first copy of the volume is missing block 10 of file 1, and the second copy is missing block 106 of file 2. Since merge is a low level utility it considers each label a file so the above errors can be thought of as block 10 of file 2 and block 106 of file 5, respectively. To fix this error we will copy through block 10 of file 5 from the first tape and the block 11 of file 5 through the end from the second tape. The following procedure will be followed.

1. Mount the first copy of the input tape on physical unit 1, the second on unit 2 and the output on unit 3.
2. Press the unit button on row labeled A. Select unit 1 when prompted. This will allocate unit A.
3. Press the unit button on row labeled B. Select unit 2 when prompted. This will allocate unit B.
4. Press the unit button on the row labeled E (output unit). Select unit 3 when prompted. This will allocate the output unit.
5. Press the Copy button that is on the row of unit A. When the merge block copy/compare dialog box is displayed, choose block mode and enter the following selection string:
    - c:c-5:10

This will copy the first part.

6. Press the Copy button that is on the row of unit B. When the merge block copy/compare dialog box is displayed, choose block mode and enter the following selection string:
    - 5:11-F:F

This will copy the rest of the tape.

The copy is now done. Note: if only two units are available (e.g. both inputs and the output are of the same media type) the same unit can have been used for the both inputs. The following step would be added before Step 4: press the unit button on row A to de-allocate the unit; dismount the first tape, mount the second tape; press the unit button again to reallocate the unit, select unit 1.

To compare the output tape to the originals follow the same procedure except allocate the third tape as unit C (instead of E) and press the Compare button (instead of the Copy button) and specify unit C as the unit to compare to.

What This Chapter Contains

This chapter contains the description of the Process of Erasing Files from Media.

14 ERASE FILES FROM MEDIA

If it is necessary to overwrite datasets, the files have to first be erased and then new files can be written using one of the copy routines, as described in Section 7. To access this utility choose Erase from the Job menu (Section 3.1). APS will first display the open unit and open volume dialog boxes to prompt for the bar-code and unit on which the tape is mounted. The Open Unit dialog box is shown in Figure 103: Open Unit Dialog Box for Erasing Files and the Open Volume dialog box are shown in Figure 104: Open Volume Dialog Box for Erasing Files. .

.

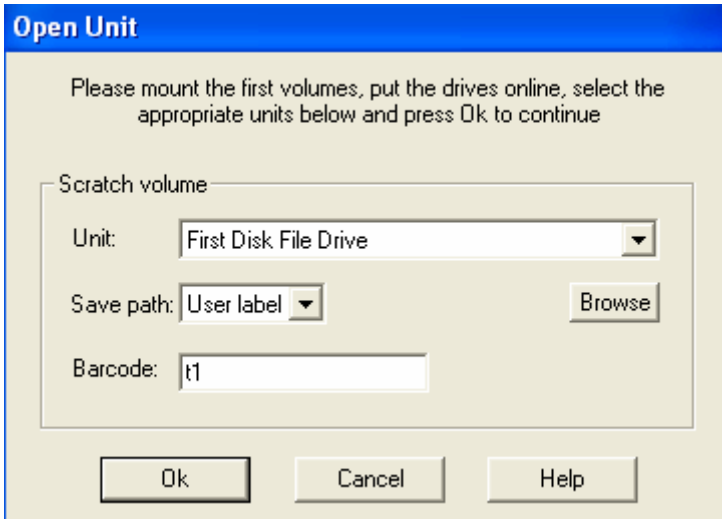


Figure 103: Open Unit Dialog Box for Erasing Files

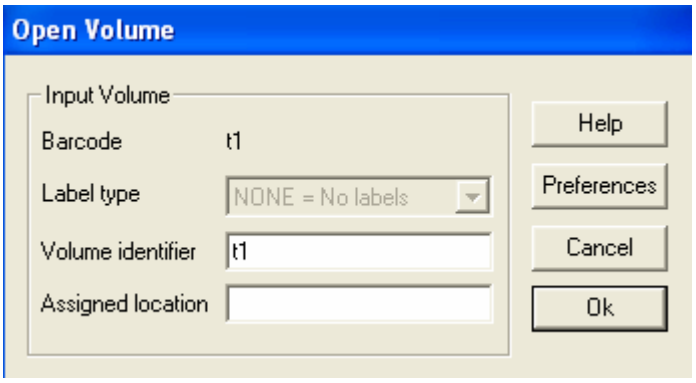


Figure 104: Open Volume Dialog Box for Erasing Files

APS will then prompt for the sequence number of the first file to erase and the tape is positioned at the end of the last file to be kept. The prompt is shown in Figure 105: APS prompt to Enter Number of File to Erase.

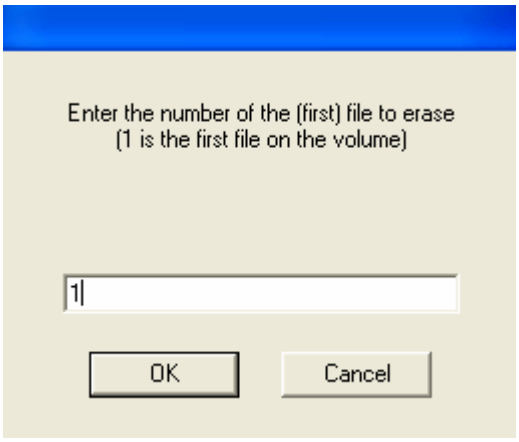


Figure 105: APS prompt to Enter Number of File to Erase

If the files read from the tape do not agree with the values in the database (a possible indication that the wrong tape was mounted) warnings will be displayed. The user is then given one final chance to verify that the files are to be deleted. The confirmation message is shown in Figure 106: Erase Confirmation Message Box.

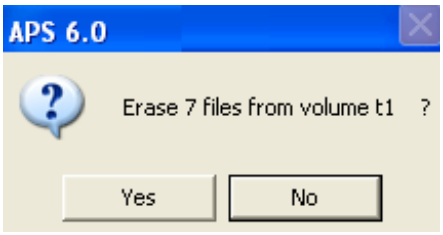


Figure 106: Erase Confirmation Message Box

If the user agrees to continue, the file master entries for the files to be deleted will be flagged for deletion by setting the preservation status field to DELETE ENTRY, and two file marks are written to the tape, effectively deleting the files. Later, a supervisor can actually delete the file master, segment, transaction note, and error entries that have been flagged for deletion.

What This Chapter Contains

This chapter contains the description of the Process of Putting APS in Reference Copy mode.

15 PUTTING APS IN REFERENCE COPY MODE

To begin a Reference Copy job, APS must be put in Reference Copy mode by selecting *Job* → *Reference Copy Mode* from the APS menu, as described in Section 3.1. When APS is in Reference Copy mode, the title bar will contain [REFERENCE MODE] to indicate the mode. The title bar is shown in Figure 107: APS in Reference Mode.

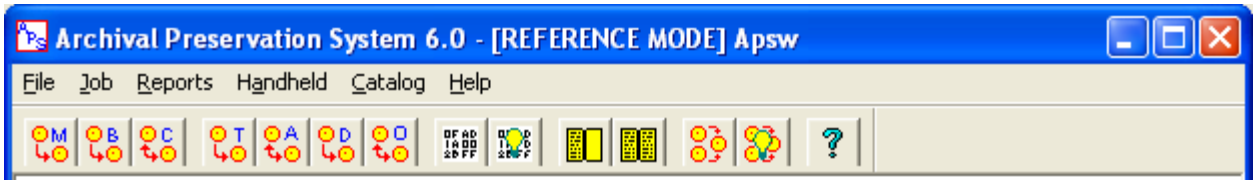


Figure 107: APS in Reference Mode

The following functions can be used in conjunction with this mode:

1. Smart Copy or Duplicate Copy;
2. Smart Compare, or Duplicate Compare;
3. Simple Dump, or Smart Dump;
4. Brief or Verbose Directory; and
5. DOS Directory.

APS will calculate the amount of time required to perform these functions and save those values in the reference table. When all steps have been completed, a report can be generated summarizing these steps and the time required to perform them.

You can start a Reference Copy job in to different ways. The first way was explain in the previous paragraph. The second way is by selecting *Job* ➔ *Copy/compare* ➔ *Reference Copy* from the APS menu, as described in Section 3.1. With this special Reference copy the user do not need to put APS in Reference Mode, the APS software will do it automatically. A second difference is that with this special Reference copy is that a Reference Compare will be performed after the copy process has finished. If the compare is successful, a Reference CD Copy will finish this special Reference copy.

In a similar way you can start the Reference Compare job by selecting *Job* ➔ *Copy/compare* ➔ *Reference Compare* from the APS menu, as described in Section 3.1. With this special Reference Compare the user do not need to put APS in Reference Mode, the APS software will do it automatically. With this Special Reference Compare no Reference CD Copy will be performed. The report is shown in Figure 109: Reference Copy Timing Report

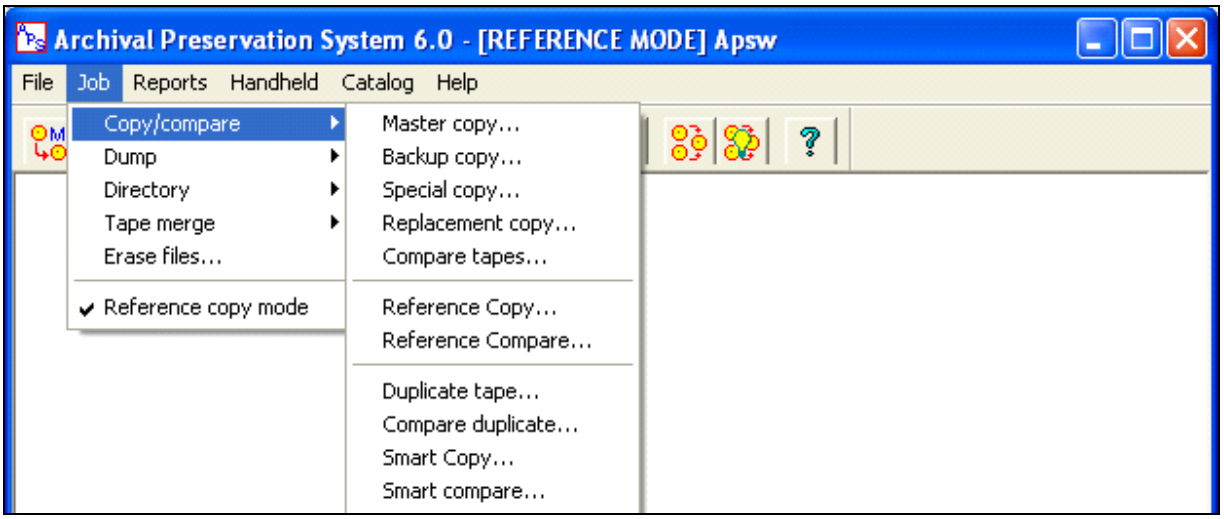


Figure 108: Reference Copy Menu Option

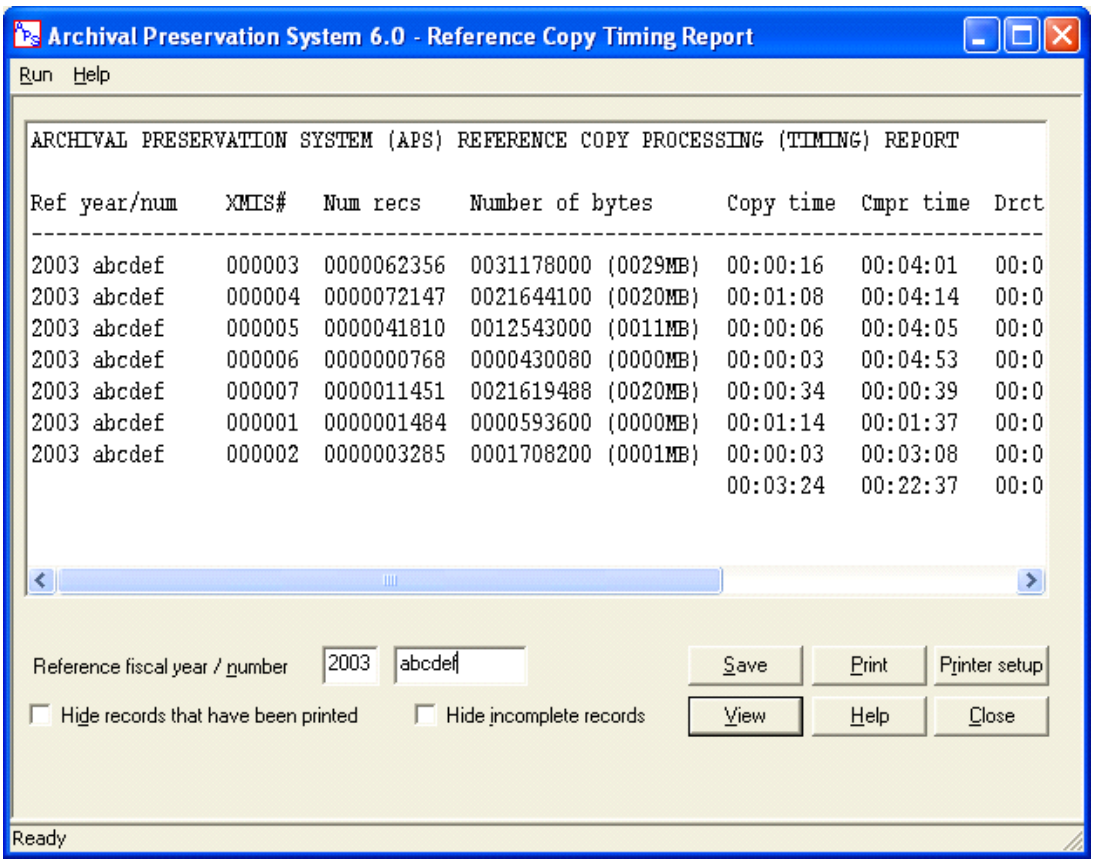


Figure 109: Reference Copy Timing Report

15.1 Making Reference Copies that Include Non-Standard Characters

Senior reviewers and Administrators have the option of making reference copies by converting files that contain non-standard characters. These non-standard characters are also referred to as conversion errors, because they result in irretrievable data losses in the copied volume. Under most conditions, attempts to convert files with non-standard characters will result in a copy failure, as described in Section 7.1. APS provides a special option to make reference copies by converting files that contain conversion errors. This option is available only under the following conditions:

1. The operator must be logged in as a Senior Reviewer or Administrator
2. The Reference copy option must be selected

The first time a non-standard character is encountered under the conditions described above. The dialog box screen for Conversion Error will appear with the Accept Copy option activated. This dialog box will appear, instead of the screen presented in Section 7.1, Figure 28: Conversion Error Dialog Box. The Conversion Error dialog box with the Accept Copy option is presented in Figure 110: Conversion Error Dialog Box with Accept Copy Option.

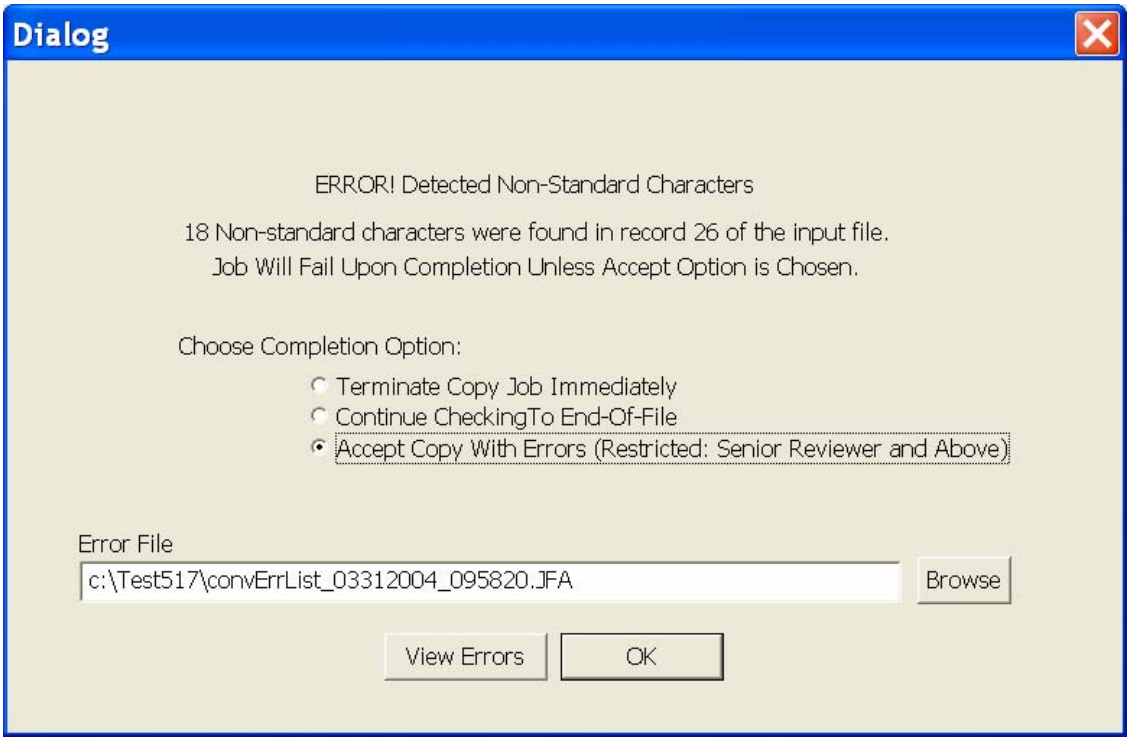


Figure 110: Conversion Error Dialog Box with Accept Copy Option

When the copy activity is completed, the screen shown in Figure 111: Total Number of Errors Encountered When Accepting Conversion Errors will appear, instead of the screen presented in Section 7.1, Figure 32: Total Number of Errors Encountered.

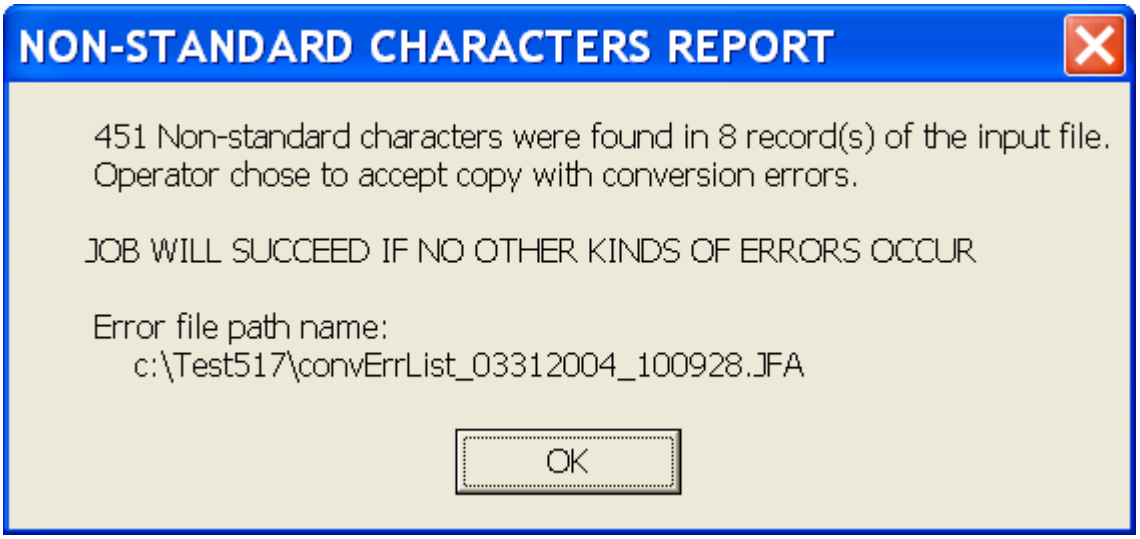


Figure 111: Total Number of Errors Encountered When Accepting Conversion Errors

The copied file will be produced, with the APS default conversion character substituted for each non-standard character. The default conversion character is usually a null character, but it can be changed to any desired value by the operator. See Section 20.2, Char Set Preferences, for instructions on setting the default conversion character.

What This Chapter Contains

This chapter contains the following information:

- View/Edit Function
- Import/Export Utilities
- View History Function

16 MANAGING THE DATABASE

This section will describe the available functions to effectively manage the APS catalog database, or CDB. A description of CDB tables and a table listing primary data structure fields is presented in Section 22.

Three functions are available to manage the CDB from APS:

1. View/Edit;
2. View History;
3. Delete Tagged Files;
4. Import; and
5. Export.

These functions are described in the subsections to follow.

16.1 View/Edit

To view or modify any of the tables in the catalog database choose *View/edit* from the APS *Catalog* menu, as described in Section 3.1. This utility allows for the simultaneous display of a main table and a sub-table. The main tables available for view/edit are the volume master, file master, file segment, record group validation and media name tables. The only sub-table rows displayed satisfy some selection criteria based on the current main table row. The sub tables available for each main table are summarized in Table 2: Tables and Sub-Tables available for View/Edit.

Main table	Sub-table	Selection key
Volume master	Volume transaction	Volume bar code
	Volume note	Volume bar code
	File segment	Volume bar code
	File master	XMIS number + file type via file segment
File master	File segment	XMIS number + file type
	File transaction	XMIS number + file type
	File note	XMIS number + file type
	Error	XMIS number + file type
	Metadata	XMIS number + file type
	Volume master	Volume bar code via file segment
File segment	File master	XMIS number + file type
	Volume master	Volume bar code
Record group validation	-- none --	
Media name	Media lot	Short media name

Table 2: Tables and Sub-Tables available for View/Edit

The dialog box for View/Edit is shown in Figure 112: View/Edit Dialog Box.

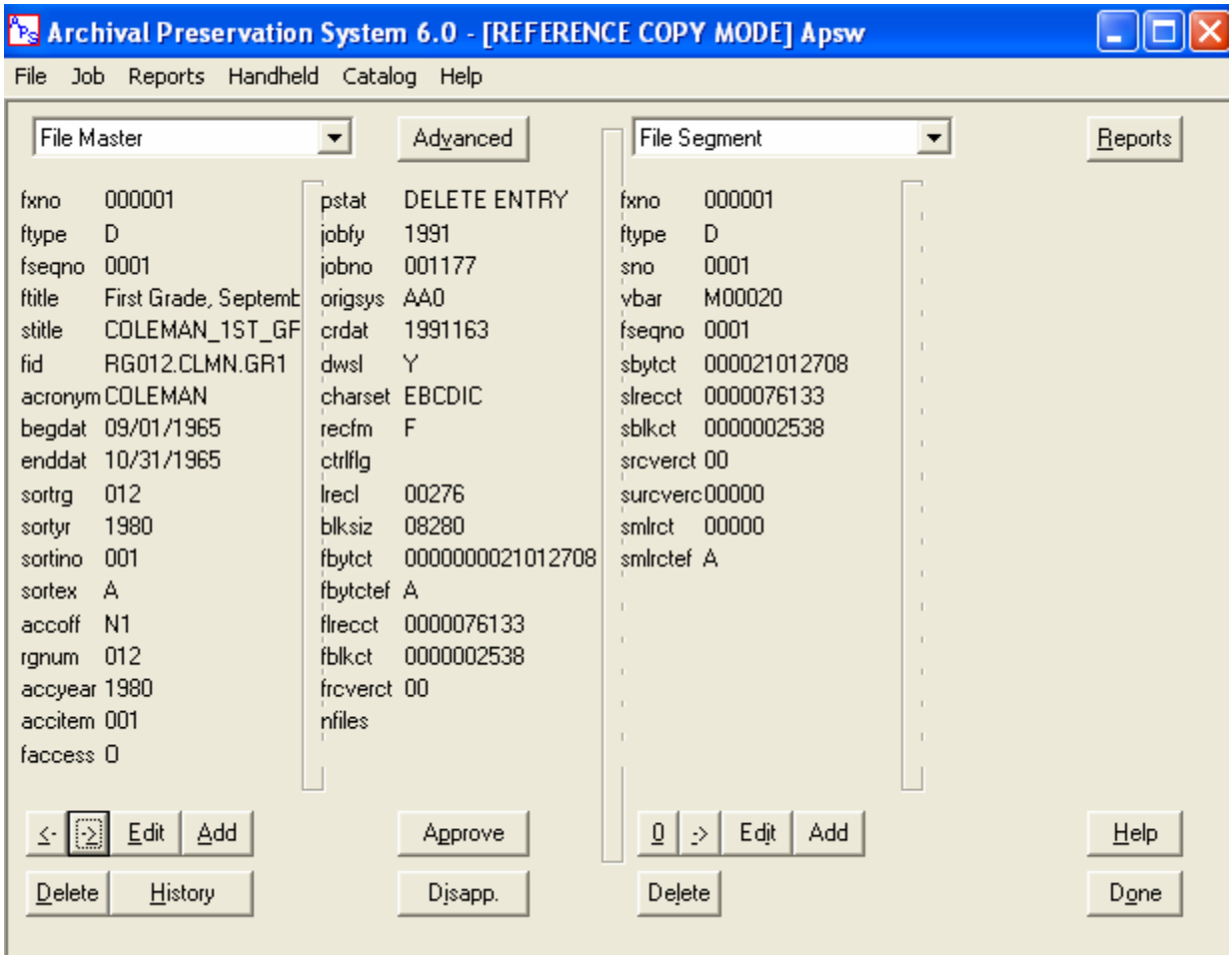


Figure 112: View/Edit Dialog Box

The current main table row appears on the left side of the dialog box and the current sub-table row appears on the right side of the dialog box. The main table can be selected by using the combo box on the upper-left portion of the dialog box. The sub-table can similarly be selected using the combo box on the upper-right portion of the dialog box. The following functions are available in the catalog view/edit utility:

1. Next main row: Pressing the  button on the left side of the dialog box, will cause the next row in the main table (and the first sub-row for that row) to be displayed. When the last row in the table has been fetched, this button will be disabled.

2. Previous main row: Pressing the  button on the left side of the dialog box; will cause the previous row in the main table (and the first sub-row for that row) to be displayed. When the first row in the table has been fetched, this button will be disabled.

3. Next sub-row: Pressing the  button on the right side of the dialog box, will cause APS to display the next sub-table row satisfying the selection criteria based on the current main-table row. When the last row in the sub-table satisfying the selection criteria has been fetched, this button will be disabled.

4. First sub-row: Pressing the [0] button on the right side of the dialog box, will cause APS to redisplay the first sub-table row satisfying the selection criteria based on the current main-table row

5. Edit main-row: Pressing the Edit button on the left side of the dialog box will pop up the database row edit dialog box to allow editing the current main table row. Only supervisors may edit a row in a table. The dialog box for Edit is shown in Figure 113: Edit Dialog Box.

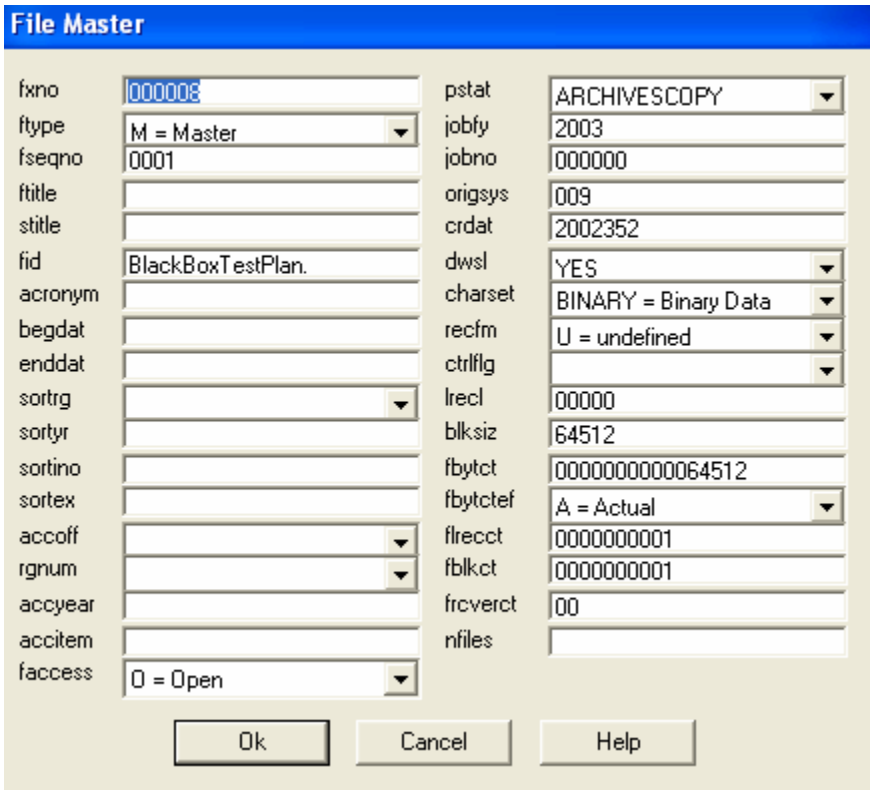


Figure 113: Edit Dialog Box

6. Edit sub-row: Pressing the Edit button on the right side of the dialog box will pop up the database row edit dialog box to allow editing the current sub-table row. This function is similar to the Edit main row function above but for the sub-table row instead of the main table row.

7. Add main-row: Pressing the Add button on the left side of the dialog box will pop up the database row edit dialog box to allow the addition of a new row to the main table. Only supervisors may add a row to a table. The dialog box for Add is shown in Figure 114: Add Dialog Box.

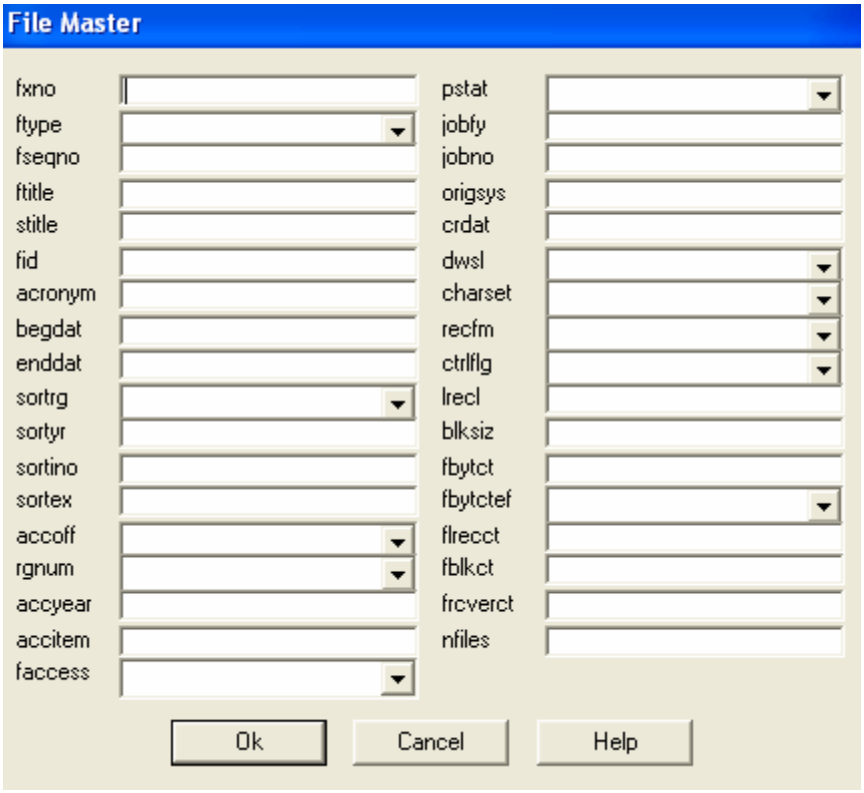


Figure 114: Add Dialog Box

8. Add sub-row: Pressing the Add button on the right side of the dialog box will pop up the database row edit dialog box to allow adding a new row to the sub-table. This function of this key is similar to the Add main row function above but for the sub-table row instead of the main table row.

9. Delete main row: Pressing the Delete button on the left side of the dialog box will delete the current row in the main table. Only supervisors may delete a row in a table. The deletion of a row has a different effect depending on the table to which it belongs. The option box for Delete is shown in Figure 115: Delete Option Box.

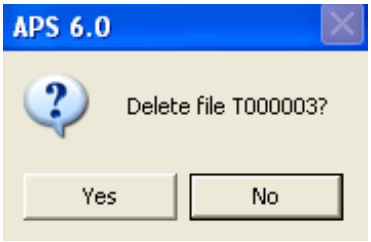


Figure 115: Delete Option Box

10. Delete sub-row: Pressing the Delete button on the right side of the dialog box will delete the current row in the sub-table. The function of this key is similar to the Delete main-row function above but for the sub-table row instead of the main table row.

11. Ad hoc query: Pressing the Advanced button on the left hand side will open a screen where ad hoc query can be performed. When making specific data selection, users must enter a SQL (Structured Query Language) statement to have APS select only the data specified. Users

unfamiliar with SQL should consult Reference [3] for comprehensive documentation. The dialog box for the Advanced query is shown in Figure 116: Advanced query Dialog Box.

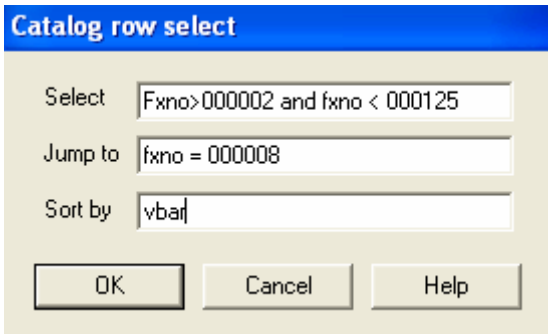


Figure 116: Advanced query Dialog Box

Table 3: SQL Commonly Used Operators includes a description and a list of SQL commonly used Operators.

Operator	Purpose	Example
=	Equality test	select * from STATION where STATION.station = 'ANMO'
!=, ^=, <>	Inequality test.	select * from STATION where STATION.station != 'ANMO'
> <	"Greater than" and "less than" tests	select latitude, longitude, station from STATION where STATION.latitude > 0 and < 10
>= <=	"Greater than or equal to" and "less than or equal to" tests	select latitude, longitude, station from STATION where STATION.latitude >= 0 and <= 10
IN	"Equal to any member of" test. Equivalent to "=ANY"	select * from STATION where STATION.station IN ('ANMO','GRFO')
NOT IN	Equivalent to "!=ALL". Evaluates to FALSE if any member of the set is NULL	select * from STATION where STATION.station NOT IN ('ANMO','GRFO')
BETWEEN	Greater than or equal to x and less than or equal to y	select * from STATION where STATION.starttime between '1990/01/01' and '1992/01/01'
x [NOT] LIKE y	TRUE if x does [not] match the pattern y. Within y, the character '%' matches any string of zero or more characters except null. The character '_' matches any single character.	select * from STATION where STATON.station like 'A%'

Table 3: SQL Commonly Used Operators

12. Printing reports: to print a report for the current main row, press the Reports button. Catalog Reports will be discussed in detail in Section 19.2. The Print Report option box is shown in Figure 117: Report Option Box.

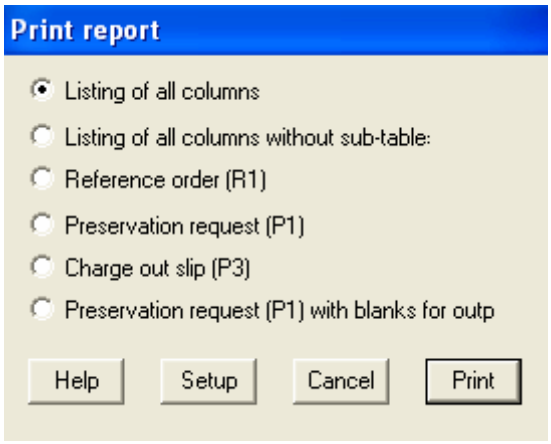


Figure 117: Report Option Box

13. Approve/disapprove jobs: Pressing the 'Approve' or the 'Disapp.' buttons on the left portion of the dialog box when the current main table is the file master table will prompt you to either approve or disapprove the copy job of the current row.
14. History: The history screen is an enhancement added to APS Version 6. History is available to users with Administrator role only. Pressing the History button while a record is displayed will open the History window that shows details pertaining to that particular record. Should you need to get the history of another record, you can use the Advanced button as described in step 11 above. Other functionality of the History screen will be discussed under Section 16.2. This screen is shown in Figure 118: History Screen.

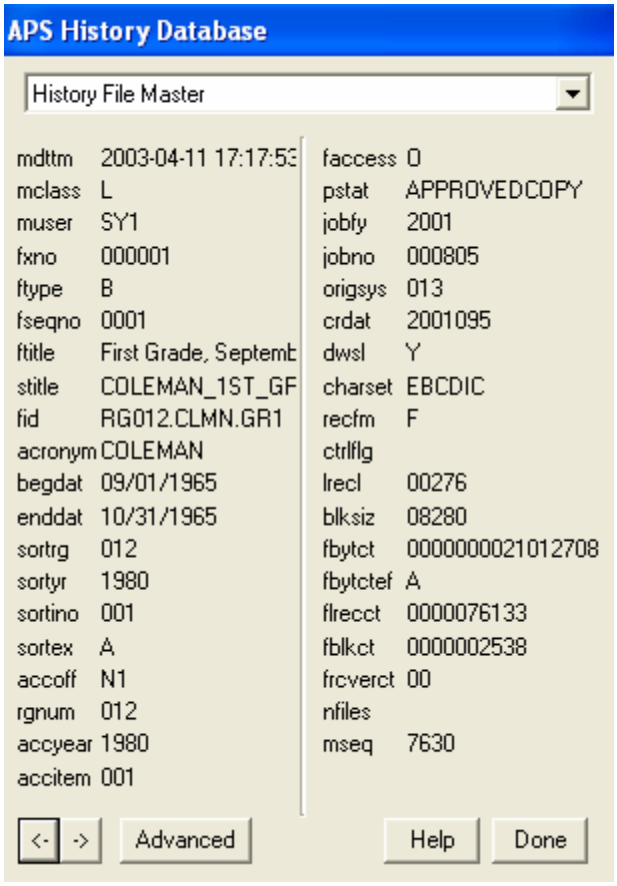


Figure 118: History Screen

15. Exit: Pressing the Done button will end the catalog view/edit utility.
16. Help: Pressing the Help button will invoke the Windows help system and provide detailed information explaining how to use the catalog database view/edit utility.

16.2 View History

As described in the above section, History screen can be accessed thru the View/Edit Catalog menu item. Alternatively, History can be accessed by clicking Catalog → View History as described in Section 3.1. Only users with Administrator role have access to the screen. The same History Screen is displayed from either access route; however, when accessed from the View History Catalog menu item, the screen is displayed and the first record in the History File Master table is queried and displayed. Users have several options to view records, they can scroll thru the records using the right and left arrow buttons, or they can use the advanced button to query a particular record. History is available for a multitude of tables:

1. History File Master;
2. History File Segment;

3. History File Transaction;
4. History File Notes;
5. History Error;
6. History Volume Master;
7. History Volume Transaction;
8. History Volume Notes;
9. History Metadata;
10. History System Parameters;
11. History Column Validation;
12. History Validation Errors;
13. History Validation Lists;
14. History Row Validation;
15. History Reviewer;
16. History User;
17. History Reference Timing;

Any of these history tables can be viewed by selecting them from the drop down box. When a selection is made, the first record in that particular table is queried and displayed. Users may select to query a particular record using the advanced button.

Clicking on the Help button will invoke the APS help screen displaying information related to the History function.

Clicking the Done button would cause the History screen to close.

16.3 Delete Tagged Files

APS gives users with Administrator and Senior Reviewer roles only access to this function. Authorized users will be allowed to delete tagged records whether the record was tagged for deletion by them or another user. To gain access to the screen, select *Catalog → Delete Tagged Files* from the Catalog menu item. Users have three options to make for their delete selection:

1. First choice is to leave both drop down lists blank and click the ok button, this will select all the records tagged for deletion, and then users can delete all records at once or one at a time. This screen is shown in Figure 119: Record Selection Screen /All Records.

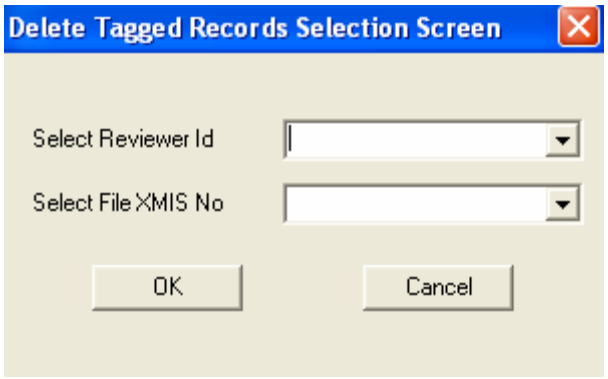


Figure 119: Record Selection Screen /All Records

2. Second choice is to select a reviewer from the drop down list, this will gray out the Select File XMIS No field and will select all the records tagged by that particular reviewer, again records can be deleted at once or one at a time. An example of this step is shown in Figure 120: Record Selection Screen / by Reviewer.

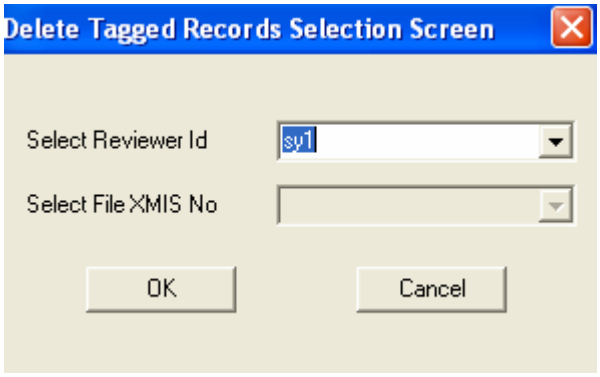


Figure 120: Record Selection Screen / by Reviewer

3. Third choice is to select the File XMIS from the drop down list; this will gray out the Select Reviewer Id drop down box and display all the records related to that XMIS No, similarly to above, records can be deleted at once or one at a time. An example of this step is shown Figure 121: Record Selection Screen/ by XMIS Number.

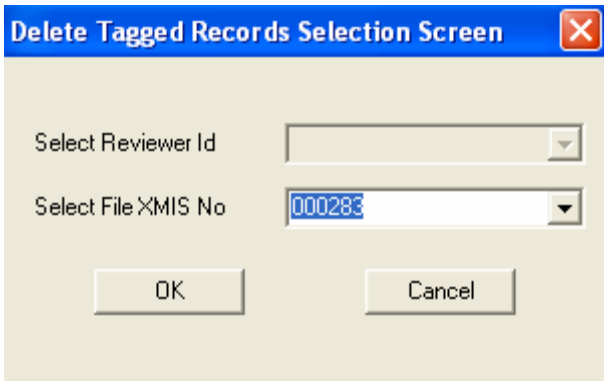


Figure 121: Record Selection Screen/ by XMIS Number

Any selection you make will take you to the next screen, a message screen informing you about your selection and giving you the choice to Delete All, One at a time or cancel. This screen and delete options are shown in Figure 122: Delete Tagged Records Information/ Action Message

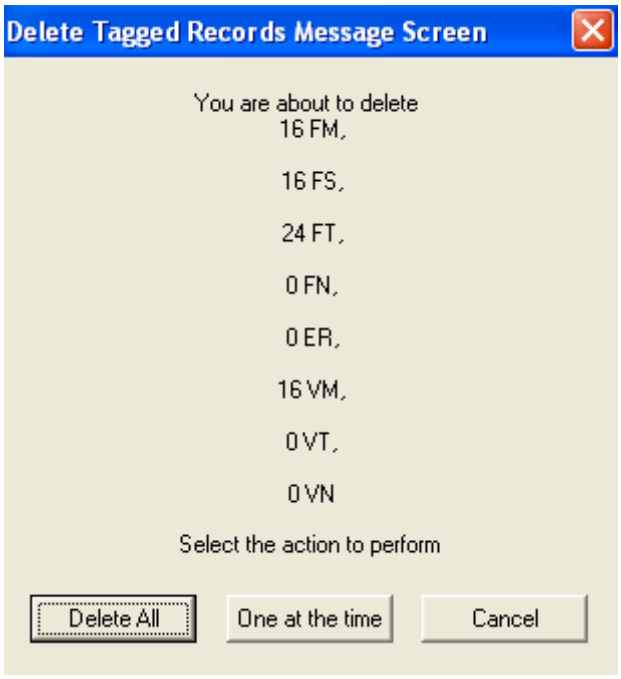


Figure 122: Delete Tagged Records Information/ Action Message Screen

If you click:

1. Cancel, you will terminate the Delete tagged Records function and display the main APS Screen;
2. Delete all, you will be prompted with a message asking to confirm, click Yes and all records will be deleted, click the No button and the Delete Tagged Records Information/ Action Message will display giving you the choice to select a different method of deletion or to cancel the job. This screen is shown in Figure 123: Confirm Delete All Message.

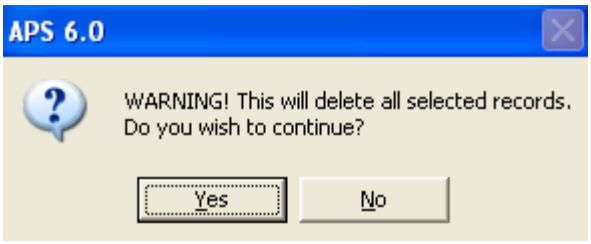


Figure 123: Confirm Delete All Message

3. One at a time, you will be presented with a screen allowing you to scroll thru the records and select the ones to delete. This screen and delete options are shown in Figure 124: Delete Tagged Files One at a Time.

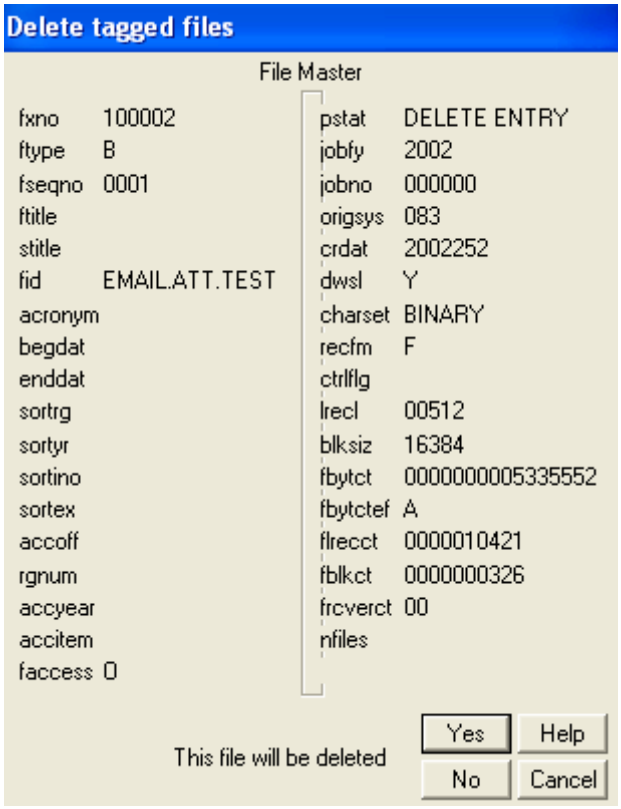


Figure 124: Delete Tagged Files One at a Time

- Click No to scroll to the next record;
- Click cancel to cancel the delete job;
- Click help for the help menu;
- Click yes to delete the displayed record. If you click yes, APS will display a message asking you to confirm

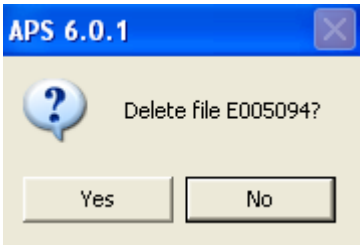


Figure 125: First Confirm Delete Message

Click yes and you will be prompted with a second message confirming the delete; Note: for a record to be deleted, you must click yes on both confirm messages. The first confirmation message is shown in Figure 125: First Confirm Delete Message. The second confirmation message is shown in Figure 126: Second Confirm Delete Message.

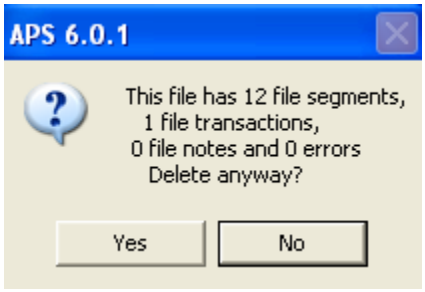


Figure 126: Second Confirm Delete Message

- Click yes and the delete is completed. If there is another record in the list you will be prompted to confirm by displaying the First Confirmation Delete message. Otherwise, the delete job is completed and APS main screen is displayed. If you click No on the confirmation message and there are more records in the list, then Delete Tagged Files One at a Time screen is displayed and you can repeat the process. Once the final record is deleted, then the delete function is completed and main APS screen displays.

16.4 Import/Export

This section describes the Import and Export functions of the Catalog Menu, accessed as described in Section 3.1. These functions allow APS to export all data created on a local Catalog Database (CDB) and import it into another database. Every row in the volume master table (VM) contains the origcat column identifying the CDB on which the VM row was created. All File Master, File Segment, Error, File Note, File Transaction, Volume Note and Volume Transaction rows can be related back to the corresponding VM row.

Access Export or Import functions from the Catalog Menu Item.

When the *Catalog* → *Export* function is selected, APS will back up all rows created on the local system to a disk file. The user can choose the name and location of this disk file.

When the *Catalog* → *Import* function is selected, APS will read an export file previously created by the APS export function. All existing entries from the CDB to be imported are deleted from the CDB before the import is performed. Every row is checked to insure that it does not conflict with the local CDB before any rows are imported. A FM, FS, FT, FN, or ER row conflicts if the ftype+fxno combination already exists in the database. A VM, VT, or VN row conflicts if the vbar already exists in the database. If any conflicts are encountered a report is generated and NO rows are imported.

The origcat column is automatically filled in when a user adds a new VM row to the database. APS will not permit modifying or deleting any rows that were not created on the local database. This includes modifying rows via the catalog view/edit utility, copy jobs or tape directories.

What This Chapter Contains

This chapter contains the description of the Process of Viewing and Storing Image Metadata and the Related Reports.

17 VIEWING AND STORING IMAGE METADATA

This utility can be used to verify metadata in the CDB against image files. It can also be used to enter or modify the metadata in the CDB. The display box for Image Metadata is shown in Figure 127: Image Metadata Display Box.

To run the utility choose *Catalog* → *Image metadata* from the menu, as described in Section 3.1:

1. Enter the file fxno number and file type and press Load CDB to read metadata from the CDB. If there are entries in the metadata table for this file they will be loaded into the appropriate fields in the form.
2. Press Load File and choose a file to display the file and to fill in the character set (image format), date, resolution and color (bits) fields. If the values obtained from the file are the same as those read from the CDB they will be displayed in black, if they are different they will be displayed in red.
3. The user can edit any of the metadata fields displayed.
4. Press Save CDB button to save all non-blank metadata fields to the CDB.

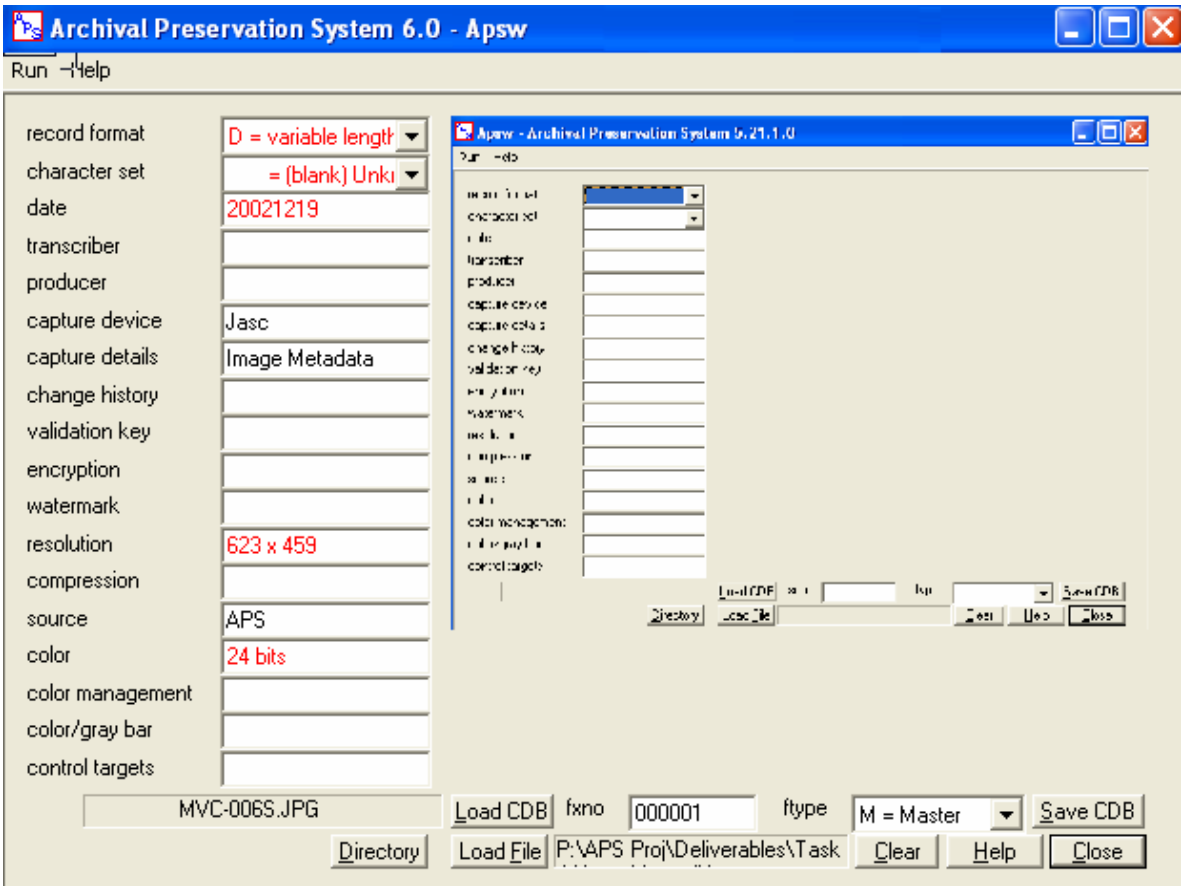


Figure 127: Image Metadata Display Box

5. Press Clear to empty all the metadata fields.
6. Press Directory to compare the current metadata fields (template) against all image files in a directory. The Directory Selection box is displayed in Figure 128: Directory Selection Box. A report will be generated and displayed on the form. If a metadata value for an image file is identical to the template that metadata value will not be printed. If the value is different it will be printed.

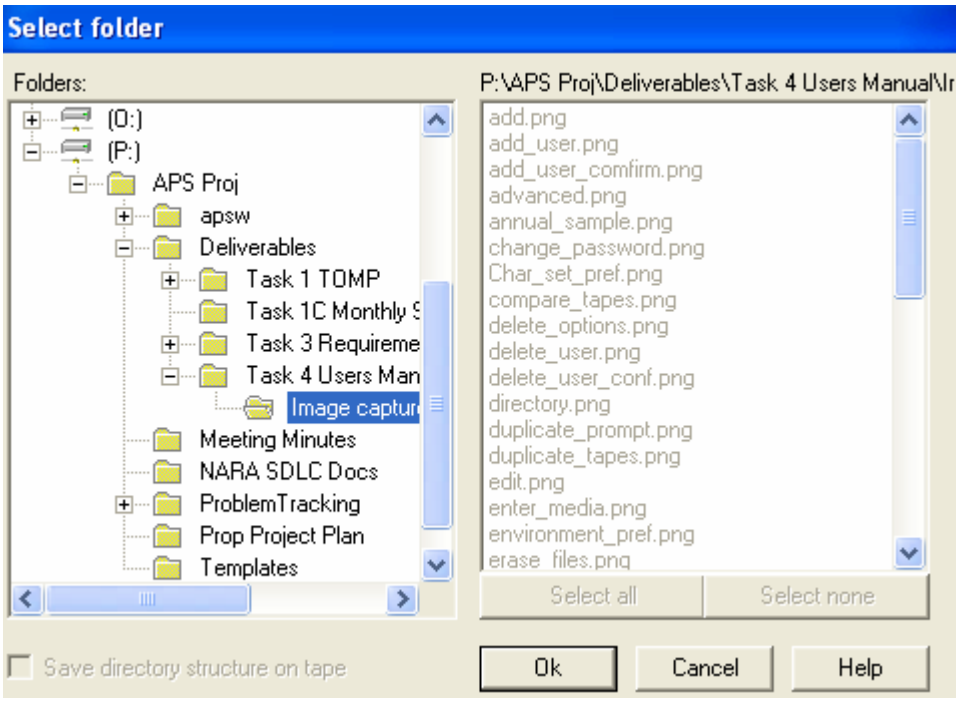


Figure 128: Directory Selection Box

The Directory display is shown in Figure 129: Directory Display.

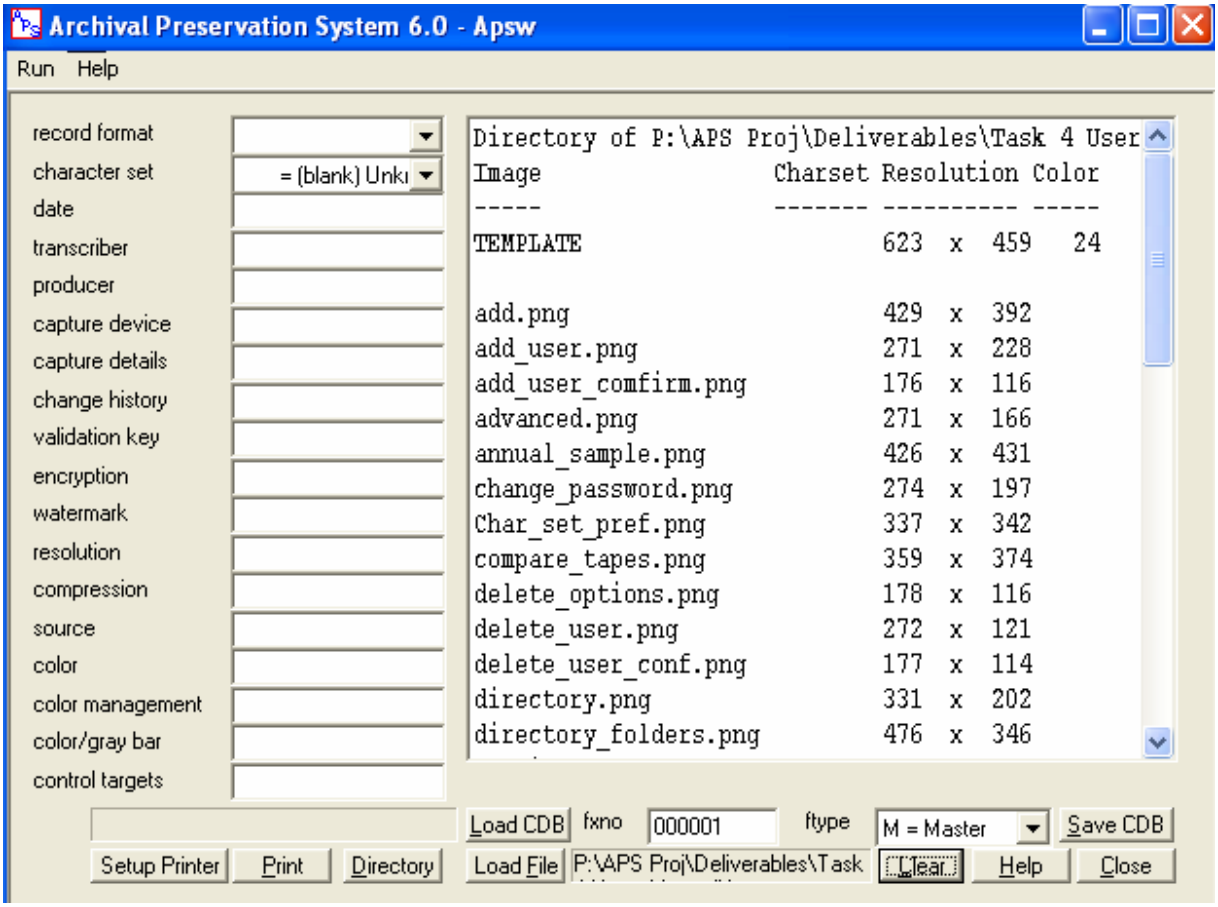
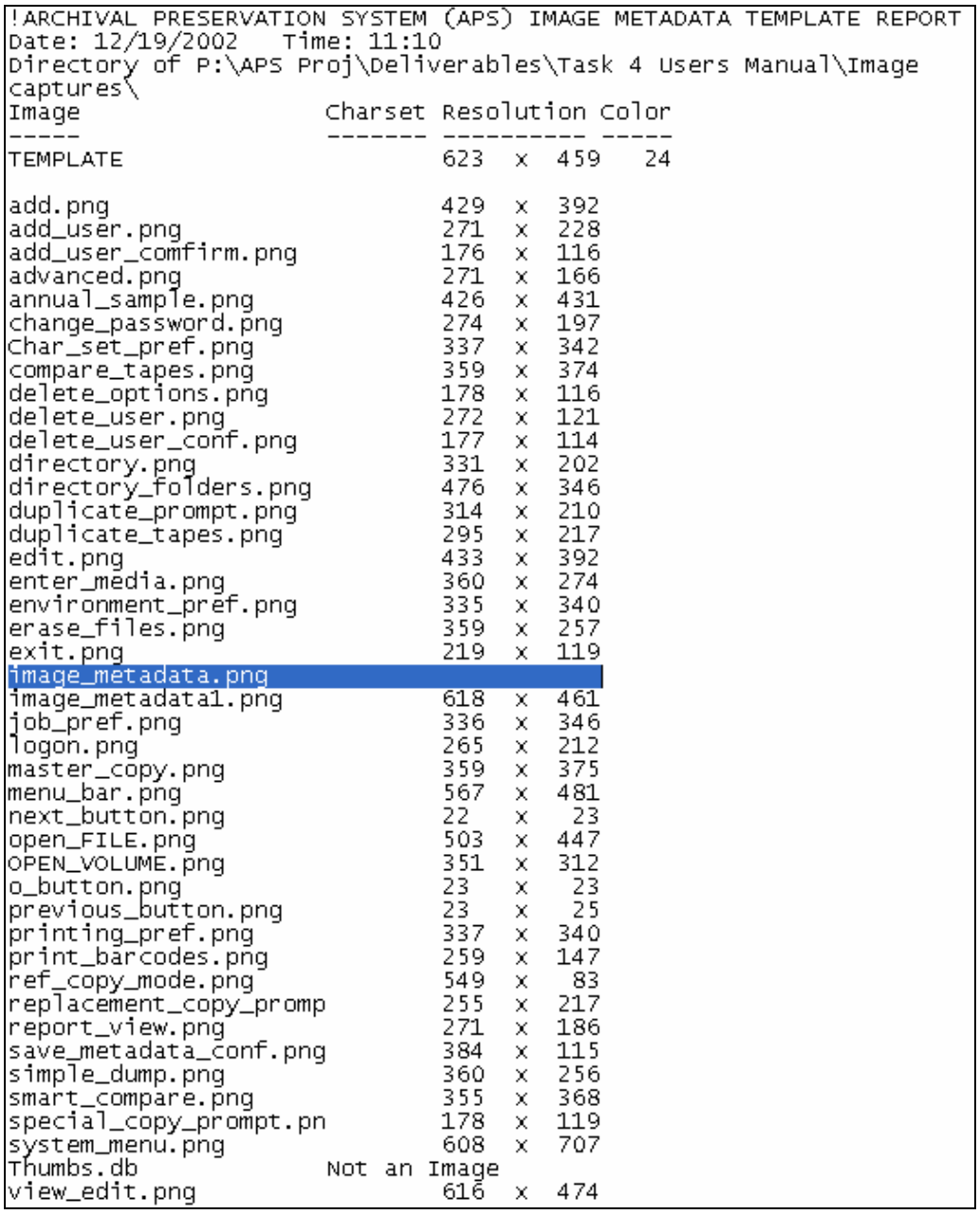


Figure 129: Directory Display

7. After the report is generated it can be sent to the report printer by pressing the Print button. A sample of the Image Metadata report is shown in Figure 130: Image Metadata Report.



```
!ARCHIVAL PRESERVATION SYSTEM (APS) IMAGE METADATA TEMPLATE REPORT
Date: 12/19/2002   Time: 11:10
Directory of P:\APS Proj\Deliverables\Task 4 Users Manual\Image
captures\
Image                  Charset Resolution Color
-----                  ------- ---------- -----
TEMPLATE                       623  x  459   24

add.png                        429  x  392
add_user.png                   271  x  228
add_user_comfirm.png           176  x  116
advanced.png                   271  x  166
annual_sample.png              426  x  431
change_password.png            274  x  197
Char_set_pref.png              337  x  342
compare_tapes.png              359  x  374
delete_options.png             178  x  116
delete_user.png                272  x  121
delete_user_conf.png           177  x  114
directory.png                  331  x  202
directory_folders.png          476  x  346
duplicate_prompt.png           314  x  210
duplicate_tapes.png            295  x  217
edit.png                       433  x  392
enter_media.png                360  x  274
environment_pref.png           335  x  340
erase_files.png                359  x  257
exit.png                       219  x  119
image_metadata.png
image_metadata1.png            618  x  461
job_pref.png                   336  x  346
logon.png                      265  x  212
master_copy.png                359  x  375
menu_bar.png                   567  x  481
next_button.png                22   x   23
open_FILE.png                  503  x  447
OPEN_VOLUME.png                351  x  312
o_button.png                   23   x   23
previous_button.png            23   x   25
printing_pref.png              337  x  340
print_barcodes.png             259  x  147
ref_copy_mode.png              549  x   83
replacement_copy_promp         255  x  217
report_view.png                271  x  186
save_metadata_conf.png         384  x  115
simple_dump.png                360  x  256
smart_compare.png              355  x  368
special_copy_prompt.pn         178  x  119
system_menu.png                608  x  707
Thumbs.db            Not an Image
view_edit.png                  616  x  474
```

Figure 130: Image Metadata Report

What This Chapter Contains

This chapter contains the following information:

- Adding Users
- Deleting Users

18 MANAGING USERS

This section will describe the process of managing users. These functions are available only to Administrators. Two functions will be discussed:

1. Adding Users; and
2. Deleting Users.

18.1 Adding Users

To add new users select *Add User* from the Catalog menu, as described in Section 3.1. APS will display the User Information dialog box prompting you to enter the new user's user id, password, logon privileges, and reviewer status. This dialog box is displayed in Figure 131: Add User Dialog Box.

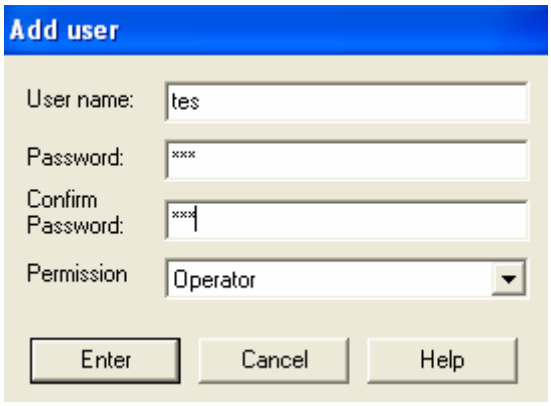


Figure 131: Add User Dialog Box

After these fields have been correctly entered APS will ask you if you really want to add the new user; answering "yes" adds the user to the system. This confirmation box is shown in Figure 132: Add User Confirmation Box.

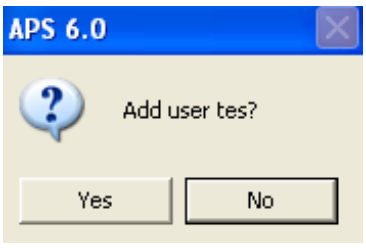


Figure 132: Add User Confirmation Box

18.2 Deleting Users

To remove a user from the system, select *Delete User* from the Catalog menu, as described in Section 3.1. APS will prompt you for the user name of the user to delete. This prompt is shown in Figure 133: Delete User Dialog Box.

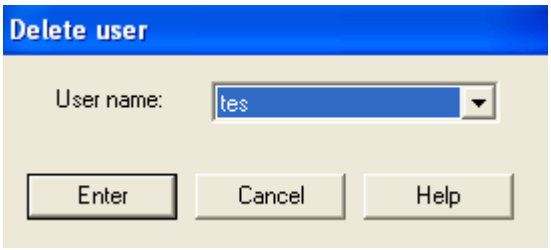


Figure 133: Delete User Dialog Box

APS will ask you if you really want to delete the user, answering yes will remove the user from the system. This confirmation is shown in Figure 134: Delete User Confirmation Box.

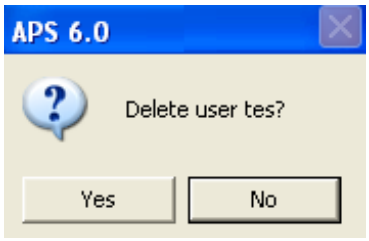


Figure 134: Delete User Confirmation Box

What This Chapter Contains

This chapter contains the following information:

1. Reports Menu
    - Line Report and Sample
    - Table Dump and Sample
    - STATSSUM Report and Sample
    - FTYPE M w/o B and Sample
    - Reference Copy Job and Sample
    - DOS Directory Listing and Sample
2. Catalog Reports
    - Listing of all Columns and Sample
    - Listing of all Columns without Sub-Tables and Sample
    - Reference Order (R1) and Sample
    - Preservation Request (P1) and Sample
    - Charge Out Slip (P3) and Sample
    - Preservation Request (P1) with Blanks for Output
3. Annual Sample Reports
    - Selection Report
    - Volume Report
    - Processing Status Report
4. System Generated Reports

19 GENERATING REPORTS

This section will cover the process of generating reports. APS users have the ability to generate several reports from multiple menu locations. Each location and the related reports will be discussed in details. At the end of each section, a series of sample reports will be included. When making specific data selection for reports, users must enter a SQL (Structured Query Language) statement to have APS select only the data specified. Users must reference an Oracle SQL document to learn the structure and use of the language see Reference [3]. This section will divided in three subsections to cover all the reports:

19.1 Reports Generated from the Report Menu Item

The 'Reports' Menu Item contains 6 reports:

1. Line Report;
2. Table Dump;
3. STATSSUM Report;
4. FTYPE M w/o B;
5. Reference Copy Job; and
6. DOS Directory Listing.

19.1.1 Line Report

To run a line report, choose Reports → *Line Reports* from the Report Menu, as described in Section 3.1. This will display the Line Report dialog box, as shown in Figure 135: Line Report Dialog Box. Press the Load button to display a file open box prompting you to choose which line report file to load. Once the report is loaded, pressing the View button will allow a screen preview of what the report will look like. A sample Line Report is shown in Figure 136: Line Report. Pressing the Print button will print the displayed report to the current report printer. (You must press View to update the report before pressing Print). After a report has been displayed on the screen, double-clicking on any entry in the list box will display the complete file master entry for the selected file.

To limit the report to a subset of files enter any valid Boolean expression in the Selection edit box. The expression can contain any column from the File Master, File Segment or Volume Master Tables. You must prefix columns with the table name (e.g. fm.fxno>200 AND fm.fxno<500). Users unfamiliar with SQL should consult Reference [3] for comprehensive documentation.

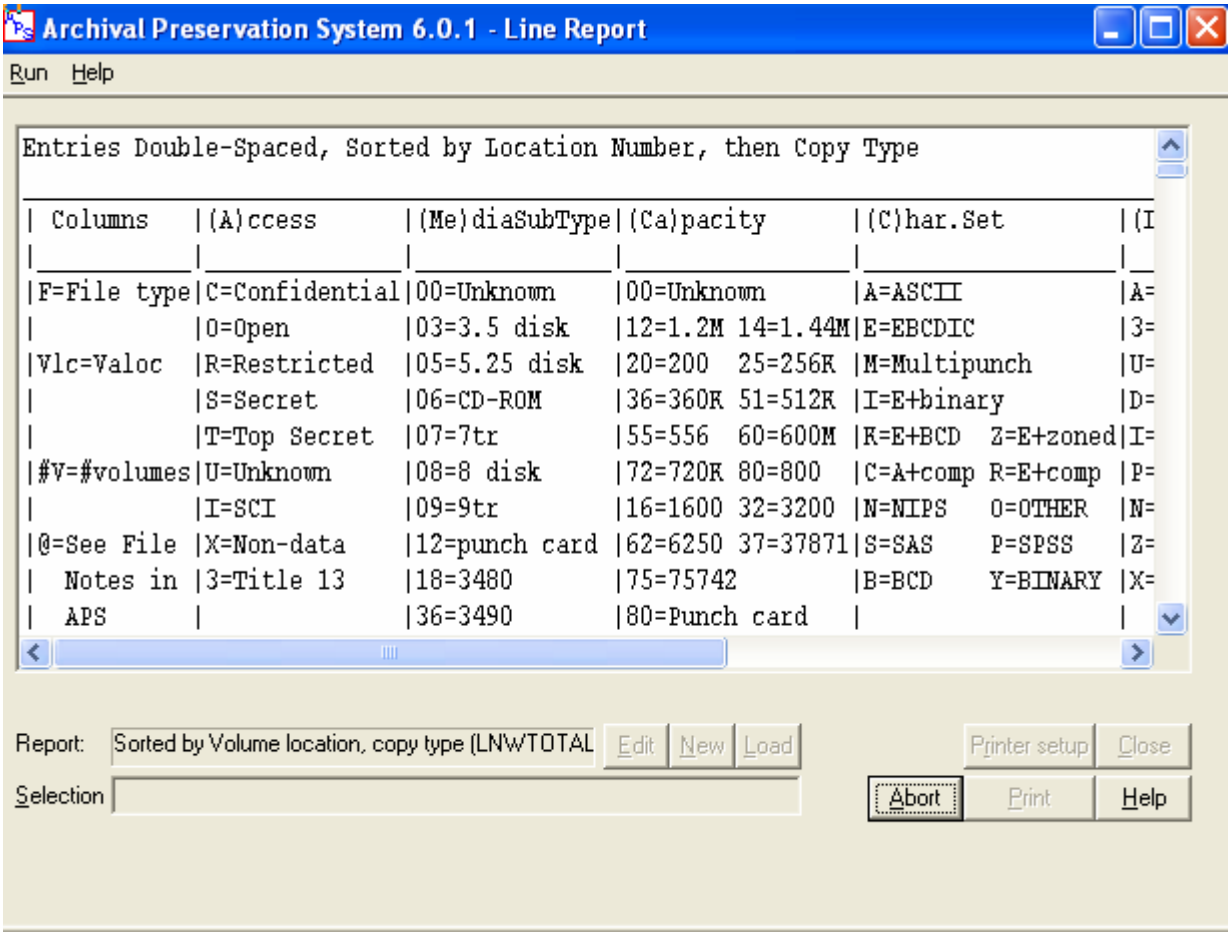


Figure 135: Line Report Dialog Box

```
! *** LINE REPORT ***  ARCHIVAL PRESERVATION SYSTEM (APS)  Network ( )  11/25/2003 11:47:44_
!F Vlc FSQ #V NSXT ID #                    A@Short Title          VolID  MeCaCL DSNAME
R LREC  BLKSZ #ofRec  Job#
!_____________________________________________________________________________________________
_____________________________
Selection = FM.FTYPE = 'F'

Entries Double-Spaced, Sorted by Location Number, then Copy Type
_____________________________________________________________________________________________
_____________________
| Columns   |(A)ccess      |(Me)diaSubType|(Ca)pacity      |(C)har.Set        |(L)abels
|(R)ecfm   |Size         |
|___________|______________|______________|________________|__________________|_____________|___
_____|_____________|
|F=File type|C=Confidential|00=Unknown    |00=Unknown      |A=ASCII           |A=ANSI  1=A
v1|D=Variable|B=bytes       |
|           |O=Open        |03=3.5 disk   |12=1.2M 14=1.44M|E=EBCDIC          |3=A v3  4=A
v4|F=Fixed   |K=1024B       |
|Vlc=Valoc  |R=Restricted  |05=5.25 disk  |20=200  25=256K |M=Multipunch      |U=A+user
label|S=Spanned |M=1048576B   |
|           |S=Secret      |06=CD-ROM     |36=360K 51=512K |I=E+binary        |D=DOS   O=OS
|U=Undef.  |G=1073741824B|
|           |T=Top Secret  |07=7tr        |55=556  60=600M |K=E+BCD  Z=E+zoned|I=IBM1401     |
|             |
|#V=#volumes|U=Unknown     |08=8 disk     |72=720K 80=800  |C=A+comp R=E+comp |P=Disk/CD     |
|             |
|           |I=SCI         |09=9tr        |16=1600 32=3200 |N=NIPS   O=OTHER  |N=None        |
|             |
|@=See File |X=Non-data    |12=punch card |62=6250 37=37871|S=SAS    P=SPSS   |Z=Other       |
|             |
|  Notes in |3=Title 13    |18=3480       |75=75742        |B=BCD    Y=BINARY |X=Unknown     |
|             |
|  APS      |              |36=3490       |80=Punch card   |                  |              |
|             |
|_____________________________________________________________________________________________
_____________________|
F Vlc FSQ #V NSXT ID #                    A@Short Title          VolID  MeCaCL DSNAME            R
LREC  BLKSZ #ofRec  Job#
_____________________________________________________________________________________________
_____________________
FA189  001 1 483-1998-001A84AA189        O AVT_Y198403_AA189     37386 00 OE  ----------------- F
00128 32000 0300106     AGENCY
_____________________________________________________________________________________________
_____________________
FA190  001 1 483-1998-001A84AA190        O AVT_Y198406_AA190     37387 00 OE  ----------------- F
00128 32000 0301246     AGENCY
_____________________________________________________________________________________________
_____________________
FA191  001 1 483-1998-001A84AA191        O AVT_Y198409_AA191     37388 00 OE  ----------------- F
00128 32000 0300296     AGENCY
_____________________________________________________________________________________________
_____________________
FA192  001 1 483-1998-001A84AA192        O AVT_Y198412_AA192     37389 00 OE  ----------------- F
00128 32000 0303361     AGENCY
_____________________________________________________________________________________________
_____________________
FA197  001 1 483-1998-001A86AA197        O AVT_Y198603_AA197     37390 00 OE  ----------------- F
00128 32000 0328101     AGENCY
_____________________________________________________________________________________________
_____________________
FA198  001 1 483-1998-001A86AA198        O AVT_Y198606_AA198     37391 00 OE  ----------------- F
00128 32000 0327701     AGENCY
_____________________________________________________________________________________________
_____________________
FA199  001 1 483-1998-001A86AA199        O AVT_Y198609_AA199     37392 00 OE  ----------------- F
00128 32000 0326401     AGENCY
_____________________________________________________________________________________________
_____________________
FA200  001 1 483-1998-001A86AA200        O AVT_Y198612_AA200     37393 00 OE  ----------------- F
00128 32000 0338417     AGENCY
_____________________________________________________________________________________________
_____________________
FAA210 001 1 483-1998-001A89AA210        R AVT_Y198906_AA210     62912 00 OE  ----------------- F
00128 32000 0717959     AGENCY
```

```
FA221  001 1 483-1998-001A92AA221        O AVT_Y199203_AA221     37518 00 OE  ----------------- F
00128 32000 0684917     AGENCY

FA237  001 1 483-1998-001A96AA237        R AVT_Y199603_AA237     37523 00 OE  ----------------- F
00128 32000 0282137     AGENCY

FA244  001 1 483-1998-001A97AA244        R AVT_Y199712_AA244     37530 00 OE  ----------------- F
00128 32000 0184501     AGENCY

FA284  001 1 483-1998-001A93AA284        O AVT_Y199312_AA284     37540 00 OE  ----------------- F
00128 32000 0340285     AGENCY

FA285  001 1 483-1998-001A94AA285        O AVT_Y199403_AA285     37541 00 OE  ----------------- F
00128 32000 0324829     AGENCY

FA286  001 1 483-1998-001A94AA286        O AVT_Y199406_AA286     37542 00 OE  ----------------- F
00128 32000 0323221     AGENCY

FA287  001 1 483-1998-001A94AA287        O AVT_Y199409_AA287     37543 00 OE  ----------------- F
00128 32000 0305205     AGENCY

FA288  001 1 483-1998-001A94AA288        O AVT_Y199412_AA288     37544 00 OE  ----------------- F
00128 32000 0302509     AGENCY

FA289  001 1 483-1998-001A95AA289        O AVT_Y199503_AA289     37545 00 OE  ----------------- F
00128 32000 0296669     AGENCY

FA290  001 1 483-1998-001A95AA290        O AVT_Y199506_AA290     37546 00 OE  ----------------- F
00128 32000 0296981     AGENCY

FA291  001 1 483-1998-001A95AA291        O AVT_Y199509_AA291     37547 00 OE  ----------------- F
00128 32000 0285933     AGENCY

FA292  001 1 483-1998-001A95AA292        O AVT_Y199512_AA292     37548 00 OE  ----------------- F
00128 32000 0285599     AGENCY

FA293  001 1 483-1998-001A96AA293        O AVT_Y199603_AA293     37549 00 OE  ----------------- F
00128 32000 0276469     AGENCY

FA294  001 1 483-1998-001A96AA294        O AVT_Y199606_AA294     37550 00 OE  ----------------- F
00128 32000 0180343     AGENCY

FA295  001 1 483-1998-001A96AA295        O AVT_Y199609_AA295     37551 00 OE  ----------------- F
00128 32000 0166860     AGENCY

FA296  001 1 483-1998-001A96AA296        O AVT_Y199612_AA296     37552 00 OE  ----------------- F
00128 32000 0171061     AGENCY

FA297  001 1 483-1998-001A97AA297        O AVT_Y199703_AA297     37553 00 OE  ----------------- F
00128 32000 0181257     AGENCY

FA298  001 1 483-1998-001A97AA298        O AVT_Y199706_AA298     37554 00 OE  ----------------- F
00128 32000 0183313     AGENCY
```

```
FA299  001 1 483-1998-001A97AA299        O AVT_Y199709_AA299     37555 00 OE  ----------------- F
00128 32000 0172222     AGENCY
_____________________________________________________________________________________________
_____________________________
FA300  001 1 483-1998-001A97AA300        O AVT_Y199712_AA300     37556 00 OE  ----------------- F
00128 32000 0177221     AGENCY
_____________________________________________________________________________________________
_____________________________
TOTALS:       29  Data Sets       29 Unique Volumes      1109135360  Total 'Known' Bytes
```

Figure 136: Line Report

19.1.2 Table Dump

Table dump reports are reports listing the first and last rows of any table in the catalog database. They can be generated at any time by selecting Reports → *Table dump* from the Report Menu, as described in Section 3.1. These reports are generated via the Table report dialog box. The dialog box is shown in Figure 137: Table Dump Report Dialog Box. To generate a report, select the desired table from the Table drop-down list box and the field to sort by from the Sort by list box. Press the View button to preview the report on the screen or the Print button to send the report to the current report printer. The Printer Setup button allows for printer selection directly from this dialog box. The number of table rows to print can be set by filling in the desired number in the Dump first __ records and Dump last __ records edit boxes. The reports can have headers that can include any combination of the following information: column names, column types or column lengths. To select which information to include in the headers check the appropriate checkbox. A sample Table Dump report is shown in Figure 138: Table Dump Report.

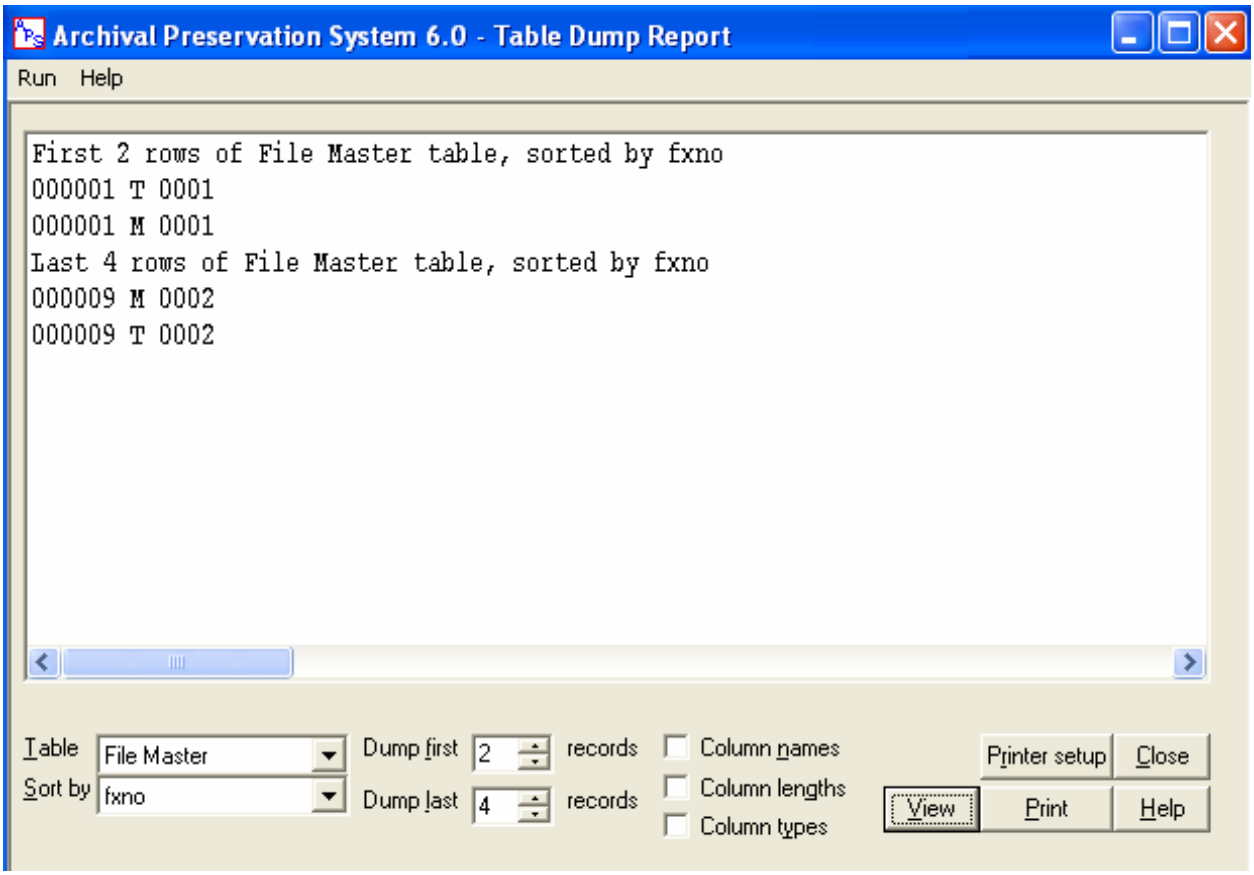


Figure 137: Table Dump Report Dialog Box

```
ARCHIVAL PRESERVATION SYSTEM (APS) TABLE DUMP REPORT   Date: 12/02/1998    Time: 11:23
VBAR   VID    VALOC  M ME MEDCAP  LABE MEDN MEDL  FREE B
000006 000006 000006 1 02 0000007  0004  0004  0004  00005 1
CHA    CHA    DEC C CH        CHA  CHA  CHA  CHA   CHA C
First 10 rows of Volume Master table, sorted by VBAR
000001 000001 020001 C 18 0          ANS3    tst1  ts11   100.0 Y
000002 000002 020002 C 18 37871              tst1  ts11   100.0 N
000003 000003 020003 C 18 0          ANSU    tst1  ts11   100.0 Y
000004 000004 020004 C 18 0          ANS3    tst1  ts11   100.0 Y
000005 000005 020005 C 18 0          ANS3    tst1  ts11   100.0 N
000006 000006 020006 C 18 0          ANSU    tst1  ts11   100.0 Y
000007 000007 020007 C 18 0          ANSU    tst1  ts11   100.0 Y
000008 000008 020008 C 18 0                  tst1  ts11   100.0 Y
000009 000009 020009 C 18 37871      ANSU    tst1  ts11   100.0 N
000010 000010 020010 C 18 0                  tst1  ts11   100.0 N
Last 10 rows of Volume Master table, sorted by VBAR
000001 000001 020001 C 18 0          ANS3    tst1  ts11   100.0 Y
000002 000002 020002 C 18 37871              tst1  ts11   100.0 N
000003 000003 020003 C 18 0          ANSU    tst1  ts11   100.0 Y
000004 000004 020004 C 18 0          ANS3    tst1  ts11   100.0 Y
000005 000005 020005 C 18 0          ANS3    tst1  ts11   100.0 N
000006 000006 020006 C 18 0          ANSU    tst1  ts11   100.0 Y
000007 000007 020007 C 18 0          ANSU    tst1  ts11   100.0 Y
000008 000008 020008 C 18 0                  tst1  ts11   100.0 Y
000009 000009 020009 C 18 37871      ANSU    tst1  ts11   100.0 N
000010 000010 020010 C 18 0                  tst1  ts11   100.0 N
```

Figure 138: Table Dump Report

19.1.3 Status Summary (STATSSUM) Report

STATSSUM reports are reports listing the number of files and volumes in the catalog database grouped by Copy Type (fm.ftype) and Preservation Status (fm. pstat)

To print a STATSSUM report, choose Reports → *STATSSUM report* from the APS menu, as described in Section 3.1. This will display the Print STATSSUM report dialog box. The dialog box is shown in Figure 139: STATSSUM Report Dialog Box. This box allows the user to choose which files will be included in the report based on copy type and preservation status. To select the files to include, simply highlight the desired file types and preservation statuses in the appropriate list box. Additional selection criteria can be entered in the Selection criteria edit box. Enter a valid Boolean expression using any columns in the File Master (FM). If a column appears in both the FM and FS tables, it must be prefixed with fm. (E.g. use fm.fxno not fxno.) E.g., to only include those files created in 1995 or earlier key crdat < '1996' in the selection box.

To preview a report on the screen, press the View button. To send the previewed report to the printer, press the Print button. The report will be sent to the current report printer. A sample STATSSUM Report is shown in Figure 140: STATSSUM Report.

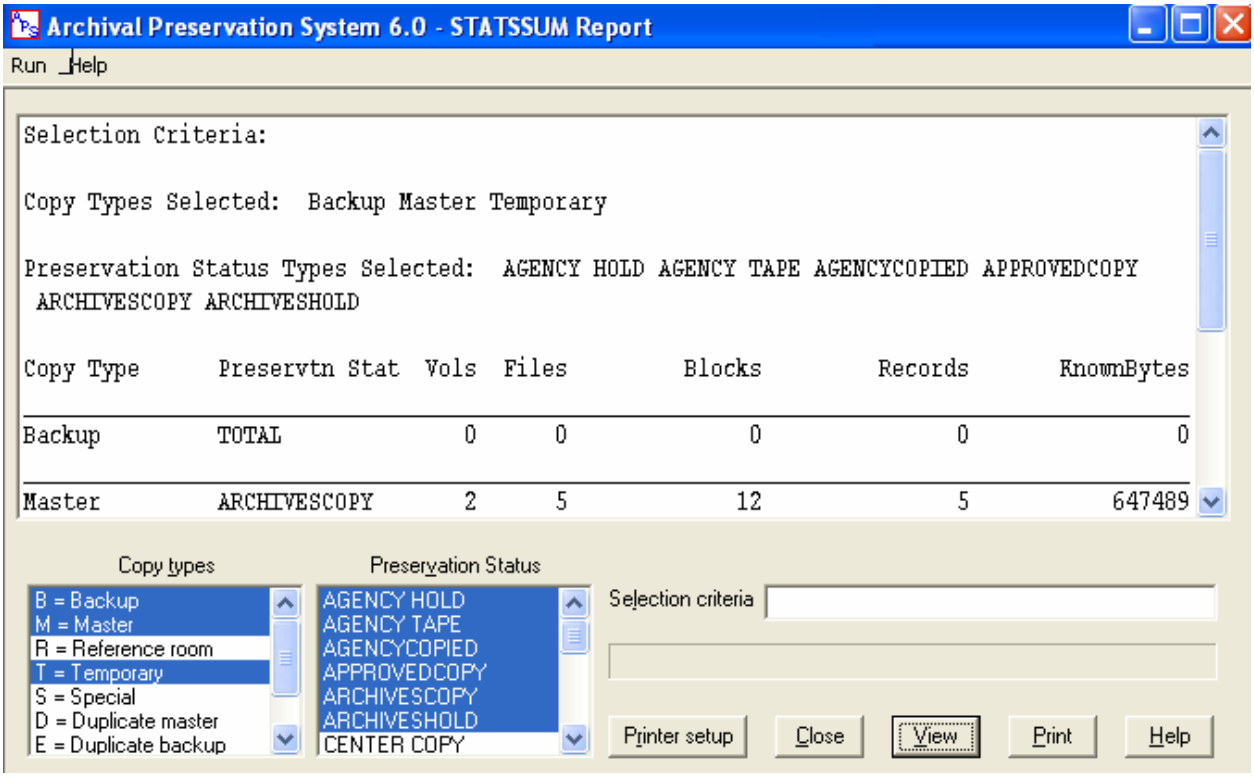


Figure 139: STATSSUM Report Dialog Box

Page 1 ARCHIVAL PRESERVATION SYSTEM (APS) 02/01/2001

Number of Unique Volumes, Files, Blocks, Records and 'Known' Bytes

Subtotaled by Copy Type and Preservation Status

(STATSSUM)

Copy Type	Preservtn Stat	Vols	Files	Blocks	Records	KnownBytes
Backup	AGENCY HOLD	7	7	460	460	426540
Backup	AGENCY TAPE	13	4	126254	811138	94272800
Backup	APPROVEDCOPY	55	183	529430	30736853	3889209803
Backup	ARCHIVESCOPY	247	460	906209192	87705494	4294967295
Backup	ARCHIVESHOLD	52	174	381600	13299226	2580064388
Backup	TOTAL	374	828	912004564	137310799	10863698454
Master	AGENCY HOLD	82	36	38938	1316896	79449600
Master	AGENCY TAPE	53	61	196035	1182001	363462379
Master	APPROVEDCOPY	85	185	992572	49404065	4294967295
Master	ARCHIVESCOPY	347	1476	4284914	157911764	4294967295
Master	ARCHIVESHOLD	19	6	336811	13086910	2484967120
Master	TOTAL	586	1764	10606898	227659264	11522571317
Temporary	AGENCY HOLD	7	3	4757628	570915	774160740
Temporary	AGENCY TAPE	30	37	142815	2737684	764119073
Temporary	AGENCYCOPIED	1	6	4740	6018	9494327
Temporary	ARCHIVESCOPY	2	6	3269	119302	31940960
Temporary	TOTAL	40	52	14423708	12949175	1589230356
GRAND TOTAL		1000	2644	937035170	377919238	23975500127

Figure 140: STATSSUM Report

19.1.4 File Type Master without Backup (FTYPE M w/o B) Report

FTYPE 'M' without 'B' Reports are reports listing all files in the catalog database of file type 'Master' without corresponding file of type 'Backup' and visa-versa. They can be generated at any time by selecting Reports → *FTYPE M w/o B* from the APS menu. The report is printed on the current report printer. A sample FTYPE 'M' without 'B' report is shown in Figure 141: FTYPE 'M' without 'B' Reports.

```
!Apsw                                                                 _
!XMIS   F Vlc Fsqn #V NSXT ID #                  A Short Title          VolID  MeCaCL DSNAME        R LREC  BLKSZ  #ofRec Job#
!_____________________________________________________________________________________________________________________________________

____________________________________________________________________________________________________________________________
| Columns    |(A)ccess      |(Me)diaSubType|(Ca)pacity      |(C)har.Set         |(L)abels      |(R)ecfm    |Size          |
|____________|______________|______________|________________|___________________|______________|___________|______________|
|F=File type|C=Confidential|00=Unknown     |00=Unknown      |A=ASCII            |A=ANSI  1=A v1|D=Variable|B=bytes       |
|            |O=Open        |03=3.5 disk    |12=1.2M 14=1.44M|E=EBCDIC           |3=A v3  4=A v4|F=Fixed    |K=1024B       |
|Vlc=Valoc   |R=Restricted  |05=5.25 disk   |20=200  25=256K |M=Multipunch       |U=A+user label|S=Spanned  |M=1048576B    |
|            |S=Secret      |06=CD-ROM      |36=360K 51=512K |I=E+binary         |D=DOS   O=OS  |U=Undef.   |G=1073741824B|
|#V=#volumes|T=Top Secret  |07=7tr         |55=556  60=600M |K=E+BCD  Z=E+zoned|I=IBM1401     |           |              |
|            |U=Unknown     |08=8 disk      |72=720K 80=800  |C=A+comp R=E+comp  |P=Disk/CD     |           |              |
|            |I=SCI         |09=9tr         |16=1600 32=3200 |N=NIPS   O=OTHER   |N=None        |           |              |
|            |X=Non-data    |12=punch card  |62=6250 37=37871|S=SAS    P=SPSS    |Z=Other       |           |              |
|            |3=Title 13    |18=3480        |75=75742        |B=BCD    Y=BINARY  |X=Unknown     |           |              |
|            |              |36=3490        |80=Punch card   |                   |              |           |              |
|__________________________________________________________________________________________________________________________|
 XMIS   F Vlc Fsqn #V NSXT ID #                  A Short Title          VolID  MeCaCL DSNAME         R LREC  BLKSZ  #ofRec Job#
____________________________________________________________________________________________________________________________________
900031 M45067 0001 5 000-    -                   O W269_003             014694 1837B3 w269.003.tar   F 00512 12288 1485720 2002030049
900052 M45066 0001 1 000-    -                   O W288_001             014596 1837B3 W288.001.TAR   F 00512 12288 0133423 2002030048
900170 M45198 0001 1 000-    -                   O W104_001             014742 1837B3 W104.001.TAR   F 00512 12288 0175712 2002030137
900053 M45072 0001 1 000-    -                   O W288_002             014597 1837B3 W288.002.TAR   F 00512 12288 0022226 2002030050
900174 M45202 0001 3 000-    -                   O W049_003             014746 1837B3 W049.003.TAR   F 00512 12288 0803356 2002030140
900168 M45195 0001 1 000-    -                   O W465_001             014739 1837B3 W465.001.TAR   F 00512 12288 0128002 2002030135
900068 M45087 0001 1 000-    -                   O W269_004             014613 1837B3 W269.004.TAR   F 00512 12288 0127129 2002030063
900059 M45076 0001 1 000-    -                   O W289_001             014623 1837B3 W289.001.TAR   F 00512 12288 0018846 2002030054
900157 M45221 0001 6 000-    -                   O W059_006             014762 1837B3 W059.006.TAR   F 00512 12288 1843325 2002030148
900058 M45075 0001 1 000-    -                   O W103_001             014622 1837B3 W103.001.TAR   F 00512 12288 0110711 2002030053
900050 M45064 0001 2 000-    -                   O W507_001             014594 1837B3 W507.001.TAR   F 00512 12288 0560268 2002030047
900046 M45051 0001 1 000-    -                   O W455_001             014590 1837B3 W455.001.TAR   F 00512 12288 0174042 2002030039
900041 M45052 0001 1 000-    -                   O W371_001             014587 1837B3 W371.001.TAR   F 00512 12288 0025332 2002030040
900038 M45054 0001 4 000-    -                   O W357_001             014584 1837B3 W357.001.TAR   F 00512 12288 1370091 2002030042
900026 M45033 0001 1 000-    -                   O W127_001             014533 1837B3 W127.001.TAR   F 00512 12288 0008278 2002030025
900027 M45034 0001 1 000-    -                   O W149_001             014534 1837B3 W149.001.TAR   F 00512 12288 0218515 2002030026
900016 M45019 0001 1 000-    -                   O W059_003             014517 1837B3 W059.003.TAR   F 00512 12288 0090451 2002030015
900000 M45003 0001 1 000-    -                   O W013_001             014501 1837B3 W013.001.TAR   F 00512 12288 0218214 2002045003
900030 M45038 0001 1 000-    -                   O                      014537 1837B3 W269.002.TAR   F 00512 12288 0009564 2002030029
900004 M45005 0001 1 000-    -                   O W016_001             014502 1837B3 W016.001.TAR   F 00512 12288 0008480 2002030006
900011 M45010 0001 3 000-    -                   O W036_001             014508 1837B3 W036.001.TAR   F 00512 12288 0931561 2002030011
900054 M45073 0001 1 000-    -                   O W288_003             014598 1837B3 W288.003.TAR   F 00512 12288 0020872 2002030051
200001 M45001 0001 1 000-    -                   O W524_001             014523 1837B3 W524.001.TAR   F 00512 12288 0065849 2002030002
200000 M45000 0001 1 000-    -                   O W481_001             014522 1837B3 W481.001.TAR   F 00512 12288 0148883 2002030001
900015 M45018 0001 1 000-    -                   O W059_002             014514 1837B3 W059.002.TAR   F 00512 12288 0019418 2002030014
900039 M45050 0001 1 000-    -                   O W361_039             014585 1837B3 W361.001.TAR   F 00512 12288 0010064 2002030038
900044 M45049 0001 1 000-    -                   O W420_001             014589 1837B3 W420.001.TAR   F 00512 12288 0219939 2002030037
900001 M45002 0001 1 015-    -                   O W015_001             014500 1837B3 W015.001.TAR   F 00512 12288 0056614 2002030003
900002 M45004 0001 1 015-    -                   O W015_002             014499 1837B3 W015.002.TAR   F 00512 12288 0010368     030005
900061 M45078 0001 1 015-    -                   O W015_004             014536 1837B3 W015.004.TAR   F 00512 12288 0012001 2002030056

-1 Masters without corresponding Backups
-1 Backups without corresponding Masters
```

Figure 141: FTYPE 'M' without 'B' Reports

19.1.5 Reference Copy Job

The Reference Copy report summarizes the time required to produce a Reference copy. A sample Reference Copy report is shown in Figure 144: Reference Copy Job Report. Access the report by selecting Reports → *Reference Copy Job* from the Report Menu, as described in Section 3.1. Each row in the report represents one file and includes the following information:

1. Reference job fiscal year and number;
2. XMIS number;
3. Number of logical records;
4. Total bytes and megabytes in the file;
5. Copy processing time (includes tape copy and cd copy);
6. Compare processing time;
7. Directory listing time (includes tape map and DOS directory listing); and
8. Dump processing time.

If the report is generated for a particular reference Job number and year, the total processing time for each column is listed at the end of the report.

If the Reference fiscal year / number fields are left blank, all reference jobs are listed.

If the Hide records that have been printed box are checked, rows for jobs that have already been printed will not be included in the list.

If the Hide incomplete records box is checked, rows that do not have times filled in for all reference job functions (copy, compare, directory, dump, and CD) will not be included in the list.

After the report has been viewed by pressing the View button, it can be sent to the printer by pressing the Print button or saved to a disk file by pressing the Save button. The dialog box for this report is shown in Figure 142: Reference Copy Job Report Dialog Box and Figure 143: Continued Reference Copy Job Report Dialog Box.

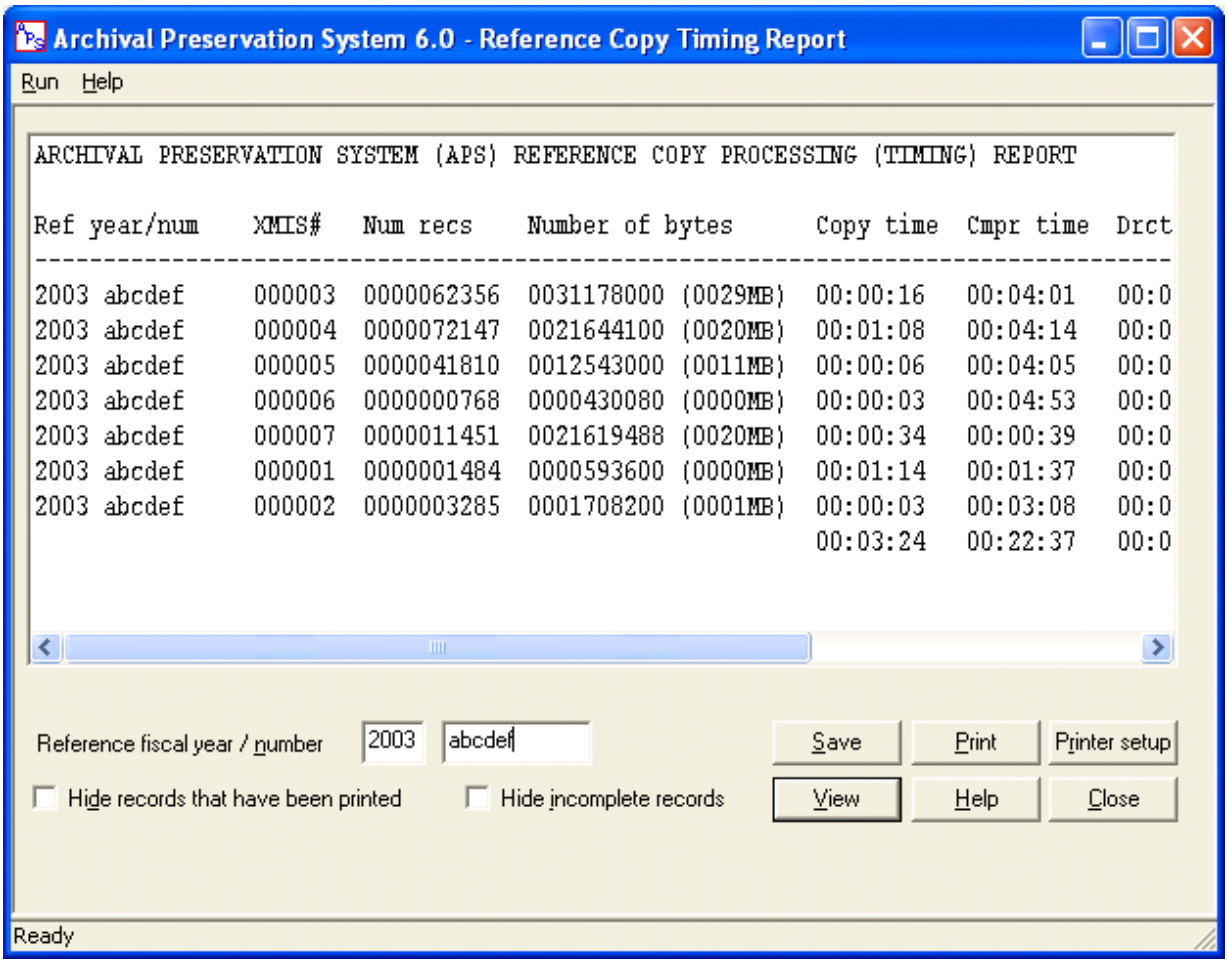


Figure 142: Reference Copy Job Report Dialog Box

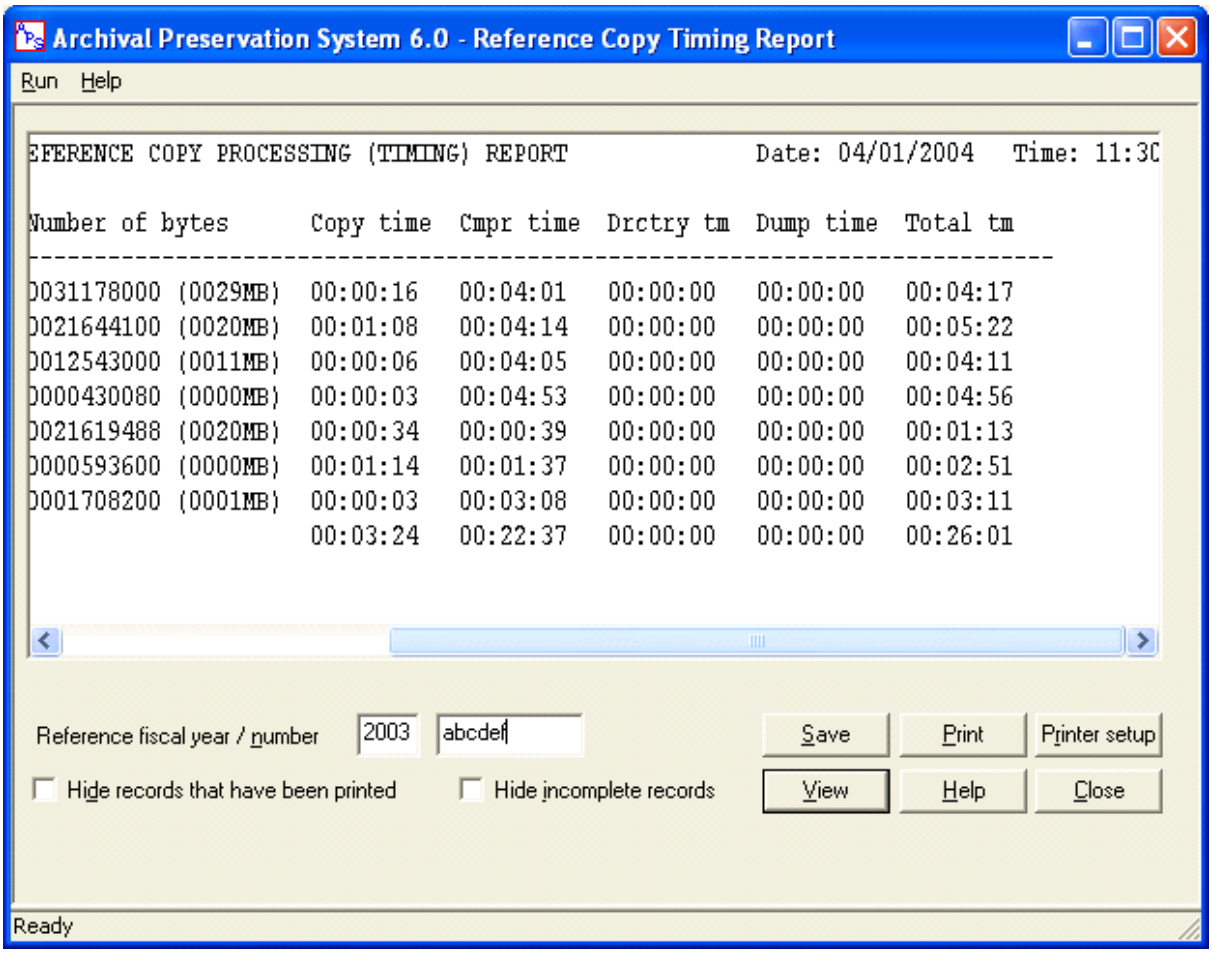


Figure 143: Continued Reference Copy Job Report Dialog Box

A sample Reference Copy report is shown in Figure 144: Reference Copy Job Report.

```
 !ARCHIVAL PRESERVATION SYSTEM (APS) REFERENCE COPY PROCESSING (TIMING) REPORT              Date: 04/01/2004   Time:
11:13
!Ref year/num    XMIS#   Num recs    Number of bytes      Copy time  Cmpr time  Drctry tm  Dump time  Total tm
!-------------------------------------------------------------------------------------------------------------
2003 abcdef     000003  0000062356  0031178000 (0029MB)  00:00:16   00:04:01   00:00:00   00:00:00   00:04:17
2003 abcdef     000004  0000072147  0021644100 (0020MB)  00:01:08   00:04:14   00:00:00   00:00:00   00:05:22
2003 abcdef     000005  0000041810  0012543000 (0011MB)  00:00:06   00:04:05   00:00:00   00:00:00   00:04:11
2003 abcdef     000006  0000000768  0000430080 (0000MB)  00:00:03   00:04:53   00:00:00   00:00:00   00:04:56
2003 abcdef     000007  0000011451  0021619488 (0020MB)  00:00:34   00:00:39   00:00:00   00:00:00   00:01:13
2003 abcdef     000001  0000001484  0000593600 (0000MB)  00:01:14   00:01:37   00:00:00   00:00:00   00:02:51
2003 abcdef     000002  0000003285  0001708200 (0001MB)  00:00:03   00:03:08   00:00:00   00:00:00   00:03:11
                                                         00:03:24   00:22:37   00:00:00   00:00:00   00:26:01
```

Figure 144: Reference Copy Job Report

19.1.6 DOS Directory Listing

DOS Directory reports provide a list of files in a specified DOS directory. A sample DOS Directory Listing report is shown in Figure 146: DOS Directory Listing Report. Access the report by selecting Reports → *DOS Directory Listing* on the Report Menu, as described in Section 3.1.

The list includes the following information about each file:

1. Last modification date/time;
2. Attributes. Can include any of the following flags: D=directory, A=archive, H=hidden, R=read-only, S=system, C=compressed;
3. File size in bytes; and
4. File name.

The list is sorted by file name.

The directory to be listed can be keyed in the appropriate box, or chosen interactively by pressing the button immediately to the right of the box.

The View button is used to display the list on the screen. After the list has been viewed, pressing the Print button will send the report to the printer.

In Reference Copy mode, the Job number and fiscal year must be specified. After the report has been generated the amount of time required to generate it is saved in the reference table. A sample DOS Directory Listing report is shown in Figure 145: DOS Directory Listing Dialog Box.

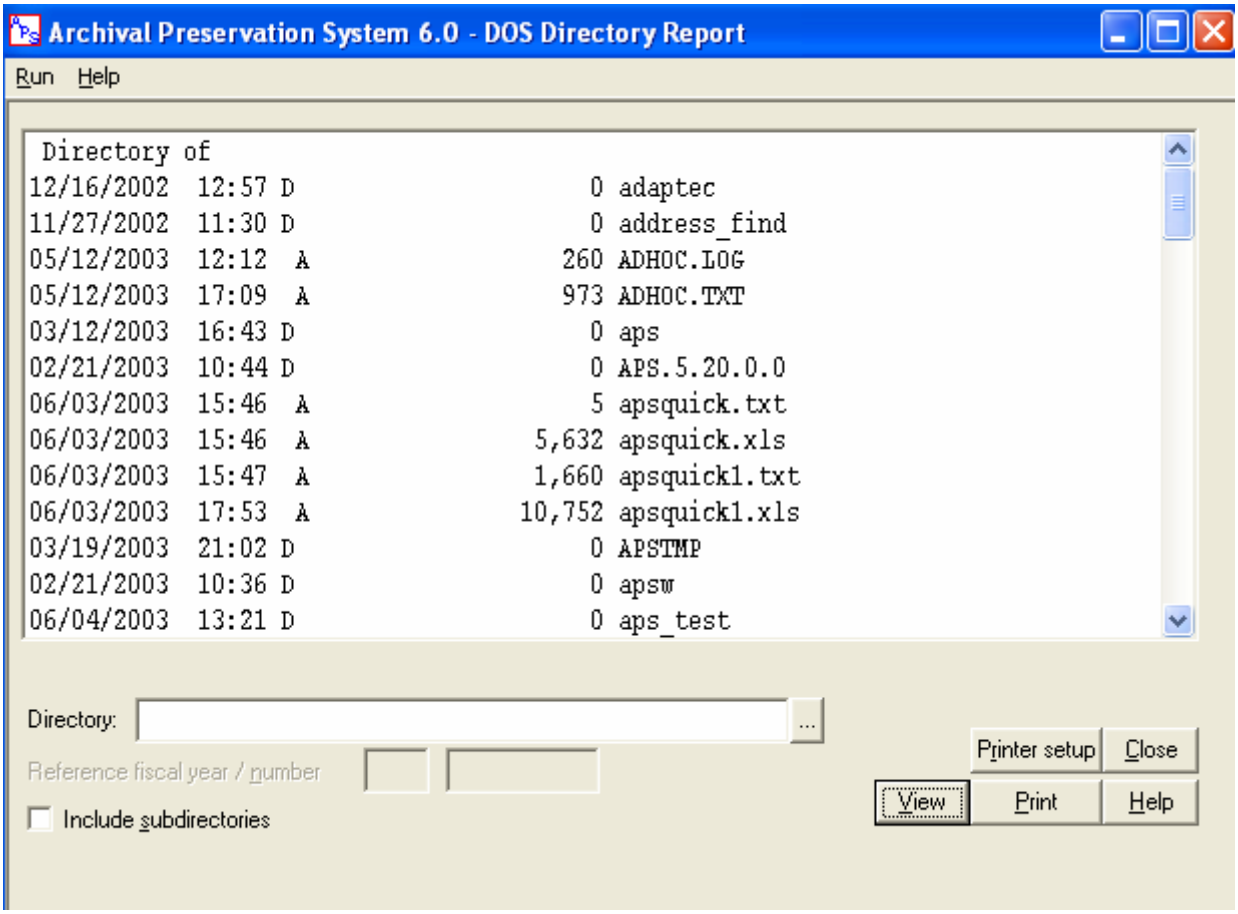


Figure 145: DOS Directory Listing Dialog Box

```
!ARCHIVAL PRESERVATION SYSTEM (APS) DIRECTORY LISTING REPORT  Date: 01/06/2003   Time: 16:31
 Directory of C:
12/12/2002  16:32  A                  495 2648200212121619
12/12/2002  16:43  A                1,175 2650200212121626
12/16/2002  11:57 D                     0 adaptec
11/27/2002  10:30 D                     0 address_find
12/16/2002  12:15 D                     0 aps
01/06/2003  16:19 D                     0 apsw
08/31/2001  09:02  A                    0 AUTOEXEC.BAT
12/18/2002  11:30  A               64,512 BlackBoxTestPlan
09/20/2002  12:18  AHRS                194 BOOT.INI
08/31/2001  08:45  AH S                512 BOOTSECT.DOS
09/20/2002  16:11  A                    0 COMLOG.txt
08/31/2001  09:02  A                    0 CONFIG.SYS
09/20/2002  12:52 D                     0 DELL
09/12/2002  15:16  AHR              3,882 DELL.SDR
12/16/2002  09:39 D                     0 Disk1
12/16/2002  09:41 D                     0 Disk2
12/16/2002  09:45 D                     0 Disk3
10/03/2002  12:22 D                     0 Documents and Settings
09/12/2002  15:05 D                     0 DRIVERS
01/06/2003  09:09  AH S     1,072,750,592 hiberfil.sys
```

```
09/20/2002  12:32 D                     0 I386
08/31/2001  09:02  AH                   0 IO.SYS
01/06/2003  14:00 D                     0 master_copy
11/26/2002  14:49 D                     0 metaframe
08/31/2001  09:02  AH                   0 MSDOS.SYS
12/17/2002  10:19  A                37,447 MVC-006S.JPG
12/17/2002  10:19  A                37,249 MVC-008S.JPG
12/17/2002  10:20  A                37,218 MVC-012S.JPG
12/02/2002  14:14 D                     0 My Downloads
09/20/2002  16:04 D                     0 NAV
09/12/2002  15:42  A                   461 NicCimIns.log
09/20/2002  14:09  AHRS             47,580 NTDETECT.COM
09/20/2002  14:09  AHRS            233,632 NTLDR
12/18/2002  11:30  A               471,063 Oct22TestRec.rtf
12/16/2002  10:23 D                     0 ora9i
12/30/2002  09:11 D                     0 orant
10/17/2002  09:08 D                     0 orris-app-copy
01/06/2003  09:09  AH S     1,207,959,552 pagefile.sys
11/27/2002  10:31 D                     0 pasdk
12/31/2002  10:00 D  R                  0 Program Files
12/30/2002  11:25  A                  257 RAPSDATA.LOG
11/06/2002  11:27  A           14,759,685 RAPSDATA.TXT
10/14/2002  14:13 D H S                 0 RECYCLER
10/21/2002  15:55  A                3,590 report.LST
01/06/2003  16:19 D                     0 Report_Samples
10/14/2002  09:05 D H S                 0 System Volume Information
12/12/2002  11:38  A                1,421 TABLE1
12/12/2002  16:13  A               18,432 TABLE1.xls
12/12/2002  16:49  A               18,432 TABLE10.XLS
12/12/2002  16:51  A               14,848 TABLE11.XLS
12/12/2002  16:14  A               19,456 TABLE1_DISAGGREGATED.XLS
12/12/2002  12:46  A                7,608 TABLE2
12/12/2002  16:14  A               39,424 TABLE2.xls
12/12/2002  16:14  A               44,544 TABLE2_DISAGGREGATED.XLS
12/12/2002  16:16  A               17,408 TABLE3.XLS
12/12/2002  16:16  A               37,888 TABLE4.XLS
12/12/2002  16:16  A               41,984 TABLE4_DISAGGREGATED.XLS
12/12/2002  16:16  A               18,432 TABLE5.XLS
12/12/2002  16:16  A               13,824 TABLE6.XLS
12/12/2002  16:16  A               13,824 TABLE6_DISAGGREGATED.XLS
12/12/2002  16:18  A               20,480 TABLE7.XLS
12/12/2002  17:18  A              173,568 table8.xls
12/12/2002  17:06  A              169,472 table9.xls
12/16/2002  11:56 D                     0 TEMP
12/17/2002  14:43  A               39,270 test_copy2
12/17/2002  14:42  A               37,031 test_copy_config
10/21/2002  10:40  A                   35 WFCNAME.INI
12/30/2002  10:05 D                     0 WINDOWS
09/20/2002  14:50 D H                   0 WUTemp
10/03/2002  12:41  AH              16,816 _NavCClt.Log

70 File(s)

Total elapsed time = 00:01 (minutes:seconds)
```

Figure 146: DOS Directory Listing Report

19.2 Catalog Reports

The Catalog Reports include 5 reports:

1. Listing of all columns;
2. Listing of all columns without sub-tables;
3. Reference order (R1);
4. Preservation request (P1);
5. Charge out slip (P3); and
6. Preservation request (P1) with blanks for output.

To access the Catalog Reports, click on the *Reports* button on the View/Edit screen, as shown in as shown in Figure 112: View/Edit Dialog Box. User will be prompted by APS to select a report from the Catalog Report Selection dialog box, as shown in Figure 147: Catalog Reports Selection.

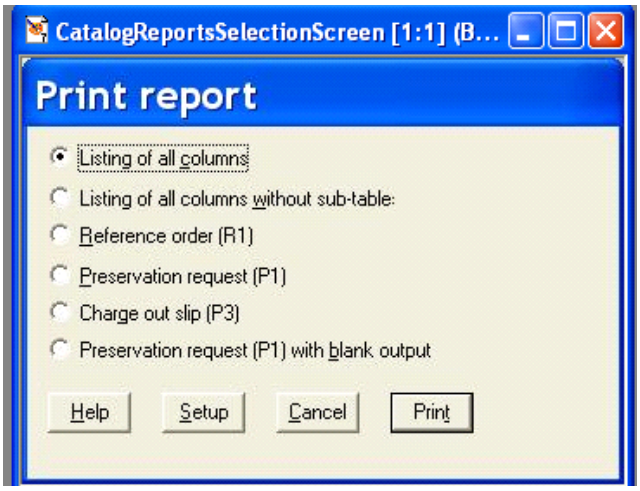


Figure 147: Catalog Reports Selection Dialog Box

To print a report, select the report you like to produce and press the 'Print' button. The report will be sent to the report printer. To configure the report printer press the 'Setup' button. The print options are shown in Figure 148: Print Options Setup Screen.

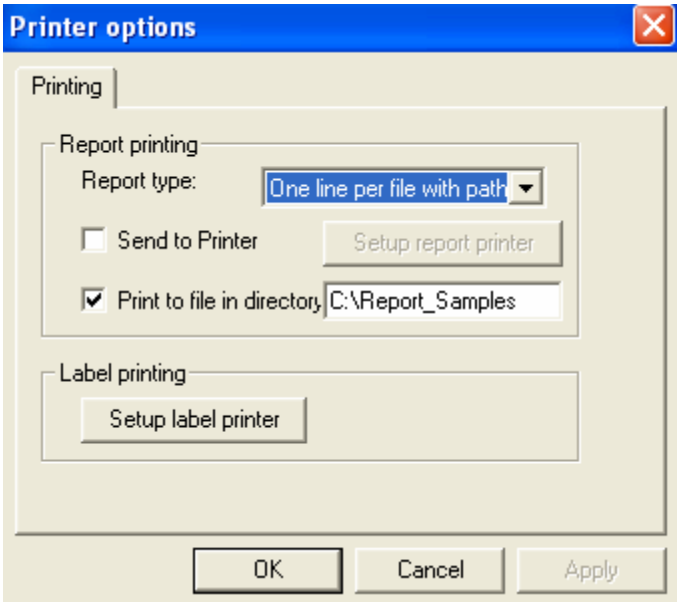


Figure 148: Print Options Setup Screen

19.2.1 Listing of all Columns

This report contains the name and value for every column (field) in the main row (record) currently displayed on the screen. The report will also contain all sub-rows related to the current main-row. e.g. if the main row is the file master table, all file segment, file transaction, file notes, error and volume master rows related to the current row (by fxno+ftype or vbar) are also printed. A sample Listing of all Columns report is shown in Figure 149: Listing of all Columns Report.

What follows is a Listing of all Columns report sample.

```
!APS Catalog Database listing         Date: 11/25/2003                    _
FILE MASTER TABLE
-----------------
FILE XMIS NUMBER: 000001    FILE TYPE: B    FILE SEQUENCE NUMBER: 0001
FULL FILE TITLE: First Grade, September-October 1965.

                     SHORT FILE TITLE: COLEMAN_1ST_GRADE
FILE IDENTIFIER: RG012.CLMN.GR1       ACRONYM OR CODE: COLEMAN
BEGINNING DATE: 09/01/1965    ENDING DATE: 10/31/1965
SORT RECORD GROUP: 012    SORT YEAR: 1980    SORT ITEM NUMBER: 001
SORT EXTENDER: A
NARA Accession Number Office Prefix: N1
NARA Accession Number Record Group Number: 012
NARA Accession Number Year: 1980
NARA Accession Number Item Number: 001    ACCESS: O
PRESERVATION STATUS: APPROVEDCOPY    PRESERVATION JOB FISCAL YEAR: 2001
PRESERVATION JOB NUMBER: 000805    ORIGINATING SYSTEM: 013
CREATION DATE: 2001095    Date written same as label? [Y/N]: Y
CHARACTER SET: EBCDIC    RECORD FORMAT: F    CONTROL CHARACTER FLAG:
LOGICAL RECORD LENGTH: 00276    BLOCK SIZE: 08280
FILE BYTE COUNT: 0000000021012708    FILE BYTE COUNT ESTIMATED FLAG: A
FILE LOGICAL RECORD COUNT: 0000076133    FILE BLOCK COUNT: 0000002538
FILE RECOVERED ERROR COUNT: 00    NUMBER OF FILES:

FILE SEGMENT TABLE
------------------
FILE XMIS NUMBER: 000001    FILE TYPE: B    SEGMENT NUMBER: 0001
VOLUME BAR CODE: 011680    FILE SEQUENCE NUMBER: 0002
SEGMENT BYTE COUNT: 000021012701
SEGMENT LOGICAL RECORD COUNT: 0000076131
SEGMENT BLOCK COUNT: 0000002531    SEGMENT RECOVERED ERROR COUNT: 01
SEGMENT UNRECOVERD ERROR COUNT: 00001
SEGMENT MISSING LOGICAL RECORD COUNT: 00001
SEG MISS LOGICAL RECD CNT EST FLG: E

VOLUME MASTER TABLE
-------------------
VOLUME BAR CODE: 011680    VOLUME IDENTIFIER: 011680
VOLUME ASSIGNED LOCATION: 014365    MEDIA TYPE: C    MEDIA SUB-TYPE: 18
MEDIA CAPACITY: 37871      LABEL TYPE: OS      MEDIA NAME: tst1
MEDIA LOT: ts11    FREESPACE PERCENT: 100.0    BAR CODE PRINTED?: Y
ORIGINATING CATALOG:

FILE TRANSACTION TABLE
----------------------
FILE XMIS NUMBER: 000001    FILE TYPE: B    FILE OPERATION: R
FILE OPERATION DATE: 2001095    FILE OPERATOR: nv
FILE OPERATION COMPLETION CODE: S
FILE OPERATION REVIEW DATE: 2003073    FILE OPERATION REVIEWER: sr1

FILE TRANSACTION TABLE
----------------------
FILE XMIS NUMBER: 000001    FILE TYPE: B    FILE OPERATION: T
FILE OPERATION DATE: 1988230    FILE OPERATOR: MRT
FILE OPERATION COMPLETION CODE: S    FILE OPERATION REVIEW DATE:
FILE OPERATION REVIEWER: RJC

FILE TRANSACTION TABLE
----------------------
FILE XMIS NUMBER: 000001    FILE TYPE: B    FILE OPERATION: J
FILE OPERATION DATE: 2001095    FILE OPERATOR: nv
FILE OPERATION COMPLETION CODE: S
FILE OPERATION REVIEW DATE: 2003073    FILE OPERATION REVIEWER: sr1
```

Figure 149: Listing of all Columns Report

19.2.2 Listing of all Columns without Sub-Tables

This report is the same as the Listing of all columns report except that only the main row is printed. A sample of the Listing of all Columns without Sub-Tables report is shown in Figure 150: Listing of all Columns without Sub-Tables Report.

```
!APS Catalog Database listing         Date: 11/25/2003                    _
FILE MASTER TABLE
-----------------
FILE XMIS NUMBER: 000001    FILE TYPE: B    FILE SEQUENCE NUMBER: 0001
FULL FILE TITLE: First Grade, September-October 1965.

                     SHORT FILE TITLE: COLEMAN_1ST_GRADE
FILE IDENTIFIER: RG012.CLMN.GR1       ACRONYM OR CODE: COLEMAN
BEGINNING DATE: 09/01/1965    ENDING DATE: 10/31/1965
SORT RECORD GROUP: 012    SORT YEAR: 1980    SORT ITEM NUMBER: 001
SORT EXTENDER: A
NARA Accession Number Office Prefix: N1
NARA Accession Number Record Group Number: 012
NARA Accession Number Year: 1980
NARA Accession Number Item Number: 001    ACCESS: O
PRESERVATION STATUS: APPROVEDCOPY    PRESERVATION JOB FISCAL YEAR: 2001
PRESERVATION JOB NUMBER: 000805    ORIGINATING SYSTEM: 013
CREATION DATE: 2001095    Date written same as label? [Y/N]: Y
CHARACTER SET: EBCDIC    RECORD FORMAT: F    CONTROL CHARACTER FLAG:
LOGICAL RECORD LENGTH: 00276    BLOCK SIZE: 08280
FILE BYTE COUNT: 0000000021012708    FILE BYTE COUNT ESTIMATED FLAG: A
FILE LOGICAL RECORD COUNT: 0000076133    FILE BLOCK COUNT: 0000002538
FILE RECOVERED ERROR COUNT: 00    NUMBER OF FILES:
```

Figure 150: Listing of all Columns without Sub-Tables Report

19.2.3 Reference Order (R1)

This report is only available if the main row is the file master or file segment table. The main body of the report is similar to the job report generated after a copy/compare job (One page per file). The information for the input file is filled in by APS, while the information for the output file is left blank. In addition, reference orders compute the estimated number of tapes required to hold this file at the current block size and with a block size of 32000 bytes when recorded at any of three densities. This report is useful before creating reference copies on non-APS equipment. A sample Reference order (R1) report is shown in Figure 151: Reference order (R1) Report.

```
!                              REFERENCE ORDER FOR ELECTRONIC RECORDS      _
REFERENCE JOB NO: _____________________  DATE: ____________________________

ORGANIZATION: ____________________________________________________________

CONTACT PERSON: __________________________________________________________

FILE XMIS NUMBER: 078064              SHORT FILE TITLE: EXP_DATABANK_Y00
FULL FILE TITLE: EXPORT DAT BANK, 2000 (EA645)
Sort Items: 029-2002-004-                    ACCESS:  Open
***************************** SPECIFICATIONS OF MEDIA AND FILE ******************************
SPECIFICATION                      INPUT(S)                       OUTPUT(S)

FILE TYPE                          M                              _____________________________

PRESERVATION STATUS                APPROVEDCOPY                   _____________________________

NUMBER OF VOLUMES                  1                              _____________________________

VOLUME ASSIGNED LOCATION           016527                         _____________________________

FILE SEQUENCE NUMBER               0003                           _____________________________

VOLUME IDENTIFIER                  016510                         _____________________________

MEDIA TYPE                         3480/90 Cartridge tape         _____________________________

MEDIA SUB-TYPE/MEDIA CAPACITY      18-track tape /37871 bpi/cpi   _____________________________

CHARACTER SET/LABEL TYPE           ASCII         /ANSI            _____________________________

FILE IDENTIFIER                    EXP.DATABANK.Y00               _____________________________

RECFM/LRECL/BLKSIZE/BLKFCTR        F /00120   /12000   /00000100 _____________________________

FILE LOGICAL RECORD COUNT          0001144860                     _____________________________

FILE BLOCK COUNT                   0000011449                     _____________________________

FILE BYTE COUNT                    0000000137383200(A)            _____________________________
ABBREV. FILE BYTE COUNT            131MB                          _____________________________
CREATION DATE                      2002203                        _____________________________
PRESERVATION JOB NUMBER            2002 003057                    _____________________________

File/Volume Notes referring to File Master/Segment or Volume Master items: 0

Est. # reels BLKSIZE =  12000:    0.767 @37871 bpi    0.994 @6250 bpi    2.584 @1600 bpi
Est. # reels BLKSIZE =  32000:    0.664 @37871 bpi    0.870 @6250 bpi    2.460 @1600 bpi
```

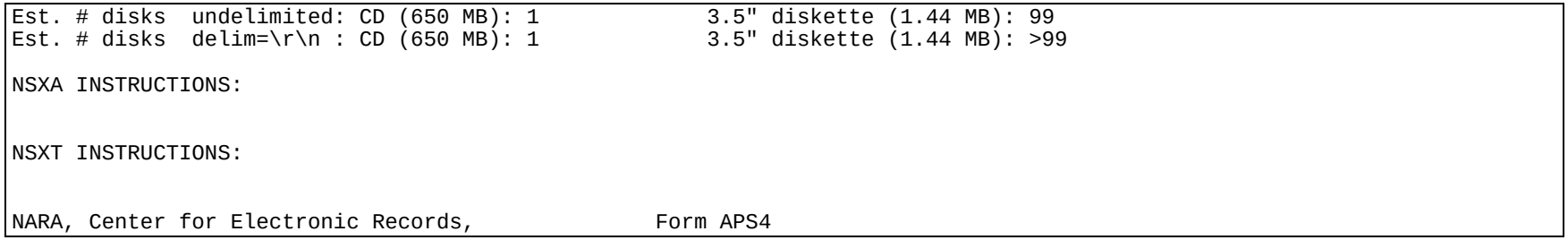


Figure 151: Reference order (R1) Report

19.2.4 Preservation Request (P1)

This report is only available if the main row is the file master or file segment table. A sample Preservation Request (P1) report is shown in Figure 152: Preservation Request (P1) Report.

```
!   PRESERVATION REQUEST FOR ELECTRONIC RECORDS   Job #: 2004-___
Date              Date              Date Checked          Date Approved       Combine
Submitted         Assigned          and Initials          and Initials        Jobs

_________         ________          _____________         _____________       _______-
_______

                                                                        Date Copied 07/22/2002
__Tmap.dump       __1st Copies      __Replacement Copies

Accession              Preservation           Copy Job              Return Media to
Agency:
Archivist:__________   Programmer:__________  Reviewer:_________    Yes ___      No ___

                                    Input Preserv.
Sort ID: 029-2002-004-                    Status: APPROVEDCOPY  Acronym:
Accession #: NN3-029-2002-004    XMIS #: 078064     Short Title: EXP_DATABANK_Y00
Full Title: EXPORT DAT BANK, 2000 (EA645)

Access: O
                    **** SPECIFICATIONS OF VOLUME(S) AND FILE(S) ****
Specification*                 Input(s)                      Output(s)


No. of volumes/files           001 / 1 (file 0003  )         001 /  1 (file 0003  )


File Type                      M                             B


Volume location(s)             016527                        016527

Volume Identifier(s)           016510                        016509

Media type                     C                             C


Medstype/Medcap/Char/Labels    18/37871 /ASCII /ANSI         18/37871 /ASCII /ANSI


File Identifier(s)             EXP.DATABANK.Y00              EXP.DATABANK.Y00


RECFM/LRECL/BLKSIZE/BLKFCTR    F/00120/12000/00100           F/00120/12000/00100


# of logical records/# blocks 0001144860/0000011449         0001144860/0000011449


Creation date (Pres.Job #)     2002203  (Job #2002003057) 2002203  (Job #2002003057)


File byte count:       (A)     0000000137383200 (131MB)     (A) 0000000137383200 (131MB)
```

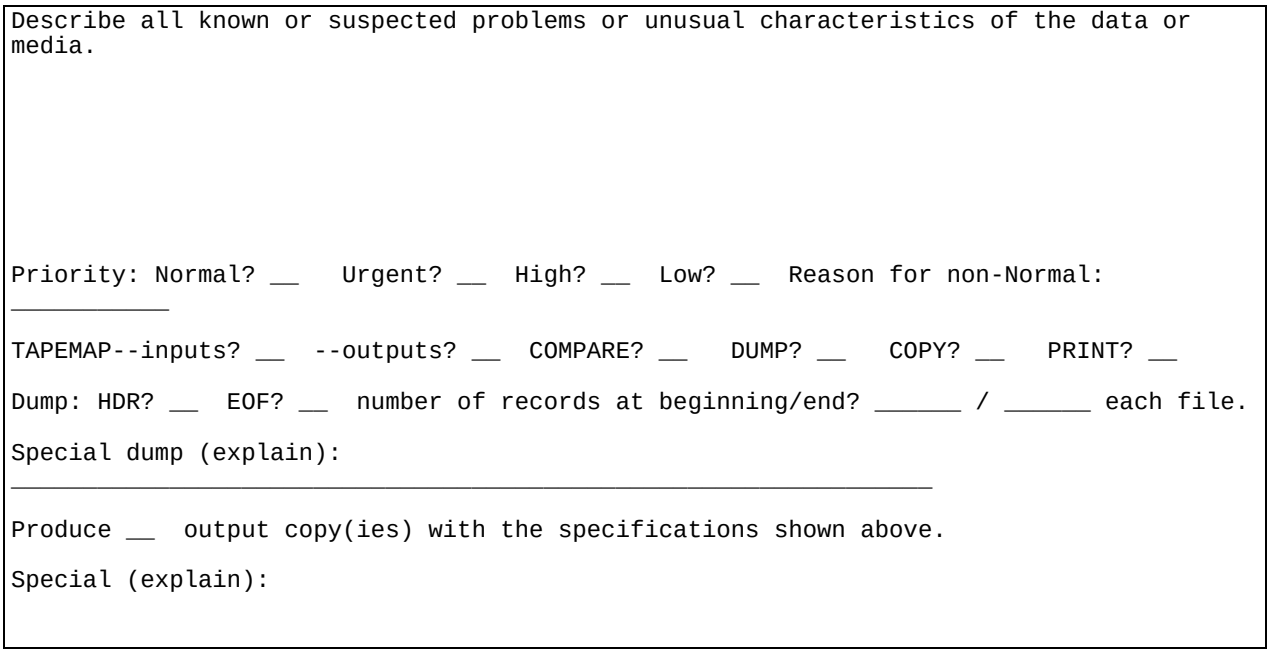


Figure 152: Preservation Request (P1) Report

19.2.5 Charge Out Slip (P3)

This report is only available if the main row is the file master or file segment table.

A sample Charge Out Slip (P3) report is shown in Figure 153: Charge Out Slip (P3) Report.

```
     CHARGE OUT SLIP FOR TEMPORARY REMOVAL OF ELECTRONIC RECORDS FROM ASSIGNED
LOCATION

Date Requested: ________  File Type: M  Volume location(s): 016527

Name of Requestor: _________________

Reason for Charge Out: |_| Preservation    |_| Reference |_| Other
_____________________

Job Number(s): ____________________________

SPECIAL INSTRUCTIONS TO SEARCHER:
_____________________________________________________

_____________________________________________________________________________
__

_____________________________________________________________________________
__

                               Search Report

Date of Search: _____________           |_| Found           |_| Not Found (see
remarks)

Name of Searcher: ____________________

REMARKS BY SEARCHER TO REQUESTOR:
_____________________________________________________

_____________________________________________________________________________
__

_____________________________________________________________________________
__


                     Description of Records Being Charged Out
        (Description of file # 1 or other specific file if a multi-file volume)

                                                    XMIS No: 078064

Sort ID: 029-2002-004-                              Short Title: EXP_DATABANK_Y00


Full Title: EXPORT DAT BANK, 2000 (EA645)

Access: O

No. of volumes/files          001 / 1 (file 0003)

Volume Identifier(s)          016510
```

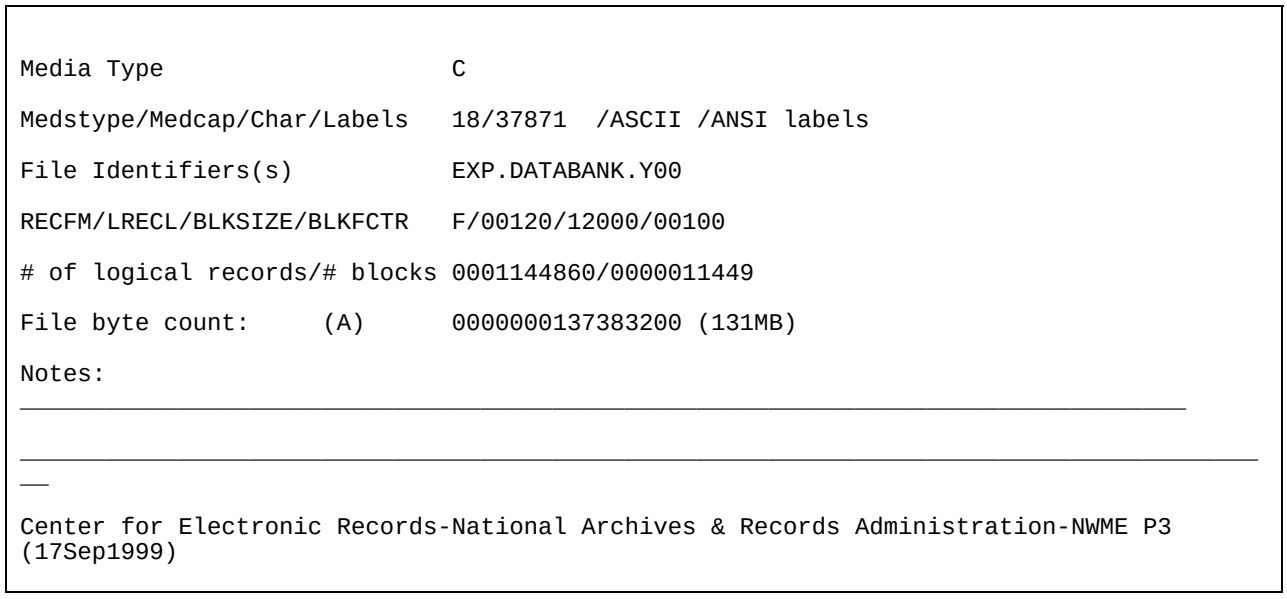


Figure 153: Charge Out Slip (P3) Report

19.2.6 Preservation Request (P1) with Blanks for Output

This report is only available if the main row is the file master or file segment table. This report is used to generate a Preservation request (P1) with empty fields. A sample Preservation Request (P1) with Blanks for Output report is shown in Figure 154: Preservation Request (P1) with Blanks for Output report.

```
     CHARGE OUT SLIP FOR TEMPORARY REMOVAL OF ELECTRONIC RECORDS FROM ASSIGNED
LOCATION


Date Requested: ________  File Type: M  Volume location(s): 016527

Name of Requestor: _________________

Reason for Charge Out: |_| Preservation    |_| Reference |_| Other
_____________________

Job Number(s): ____________________________

SPECIAL INSTRUCTIONS TO SEARCHER:
_____________________________________________________

_____________________________________________________________________________
__

_____________________________________________________________________________
__

                                Search Report

Date of Search: _____________            |_| Found           |_| Not Found (see
remarks)

Name of Searcher: ____________________

REMARKS BY SEARCHER TO REQUESTOR:
_____________________________________________________

_____________________________________________________________________________
__

_____________________________________________________________________________
__


                       Description of Records Being Charged Out
        (Description of file # 1 or other specific file if a multi-file volume)

                                                    XMIS No: 078064

Sort ID: 029-2002-004-                              Short Title: EXP_DATABANK_Y00


Full Title: EXPORT DAT BANK, 2000 (EA645)

Access: O

No. of volumes/files          001 / 1 (file 0003)

Volume Identifier(s)          016510
```

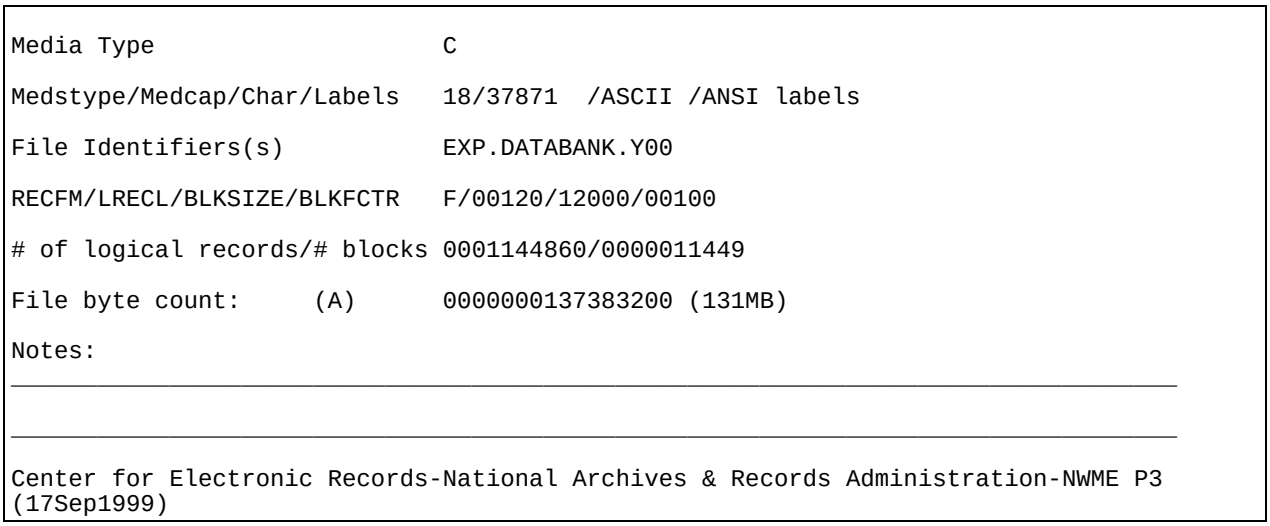


Figure 154: Preservation Request (P1) with Blanks for Output report

19.3 Annual Sample/Annual Sample Reports

The annual sample utility is available by choosing *Catalog* → *Annual sample* from the Catalog Menu, as described in Section 3.1. The dialog box for the Annual Sample is shown in Figure 155: Annual Sample Dialog Box.

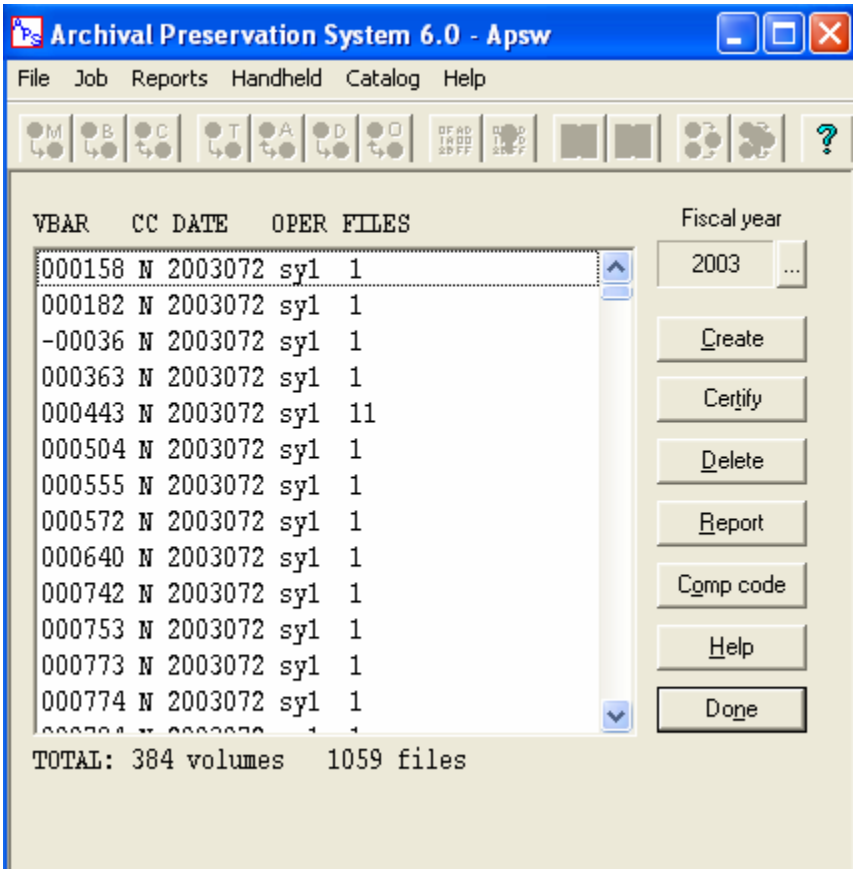


Figure 155: Annual Sample Dialog Box

This utility can be used to select a reliable and random sample of 384 volumes once each fiscal year from the master and backup volumes written before October 1 of the current fiscal year; delete the sample, if needed; and to certify the completion of the Annual Sample testing.

When the utility is started it will display the sample for the current fiscal year if one has already been selected.

The following items are displayed for every volume in the sample:

1. VBAR: barcode of the volume.
2. CC: processing completion code: N=not yet tested, S=Success, F=Failed, A=Aborted.
3. DATE: date volume was selected or processed.
4. OPER: user processing volume.

5. FILES: number of files on volume.
6. To create the annual sample, press the "Create" button.
7. To certify the annual sample after all volumes have been processed press the "Certify" button. If it is necessary to recertify a sample, press the "Certify" button.
8. If it is necessary to delete a sample press the "Delete" button.
9. To generate any annual sample report on demand press the "Reports" button to display the annual sample reports dialog box. This is shown in Figure 156: Annual Sample Report Dialog Box. Report details will be discussed later in this section.

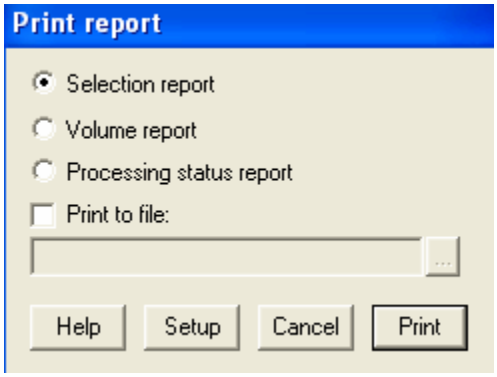


Figure 156: Annual Sample Report Dialog Box

10. To manually change the completion code of any volume, highlight the volume in the list box and press the "Comp. code" button.

A volume is selected in the annual sample by creating a VT entry for that volume and FT entries for every file on the volume with a VOP/FOP of 'A'.

Volumes are processed for the annual sample via the Brief and Verbose Directory functions.

19.3.1 Annual Sample Reports

As shown in Figure 156: Annual Sample Report Dialog Box, three reports are available:

1. Selection report similar to the annual sample utility dialog box display which lists all of the selected volumes with a sum of the number of volumes and files selected. A sample of the Selection Report is shown in Figure 157: Annual Sample Selection Report.

```
!APS Annual Sample 2004 Selection Report      Date: 11/25/2003          _
VBAR   CC DATE   OPER FILES
!
000236 N 2003329 SY1  1
000308 N 2003329 SY1  1
000322 N 2003329 SY1  1
000363 N 2003329 SY1  1
000409 N 2003329 SY1  1
```

```
000417 N 2003329 SY1  1
-00046 N 2003329 SY1  1
000546 N 2003329 SY1  1
000548 N 2003329 SY1  1
-00057 N 2003329 SY1  1
000613 N 2003329 SY1  1
000657 N 2003329 SY1  1
000690 N 2003329 SY1  1
000745 N 2003329 SY1  1
000791 N 2003329 SY1  1
000837 N 2003329 SY1  1
000876 N 2003329 SY1  1
000928 N 2003329 SY1  14
000933 N 2003329 SY1  1
001034 N 2003329 SY1  1
001063 N 2003329 SY1  1
001082 N 2003329 SY1  1
001124 N 2003329 SY1  1
001152 N 2003329 SY1  1
|
|
|
|
|
TOTAL: 384 volumes   1419 files
```

Figure 157: Annual Sample Selection Report

2. Volume report similar to line list reports, described in Section 19.1.1, for each volume selected which identifies the volume and all of the files on that volume with a page break between volumes. A sample of Volume Report is shown in Figure 158: Annual Selection Volume Report.

```
!ARCHIVAL PRESERVATION SYSTEM (APS)      Annual Sample Volume Report       Date: 2004/11/0025_
!F Vlc  VBAR   sn FSQ NSXT ID #                   A Short Title          VolID  MeCaCL DSNAME          Jobfy crdat   fopdat oper cc
!_______________________________________________________________________________________________________________________________________

____________________________________________________________________________________________________________________________
| Columns    |(A)ccess      |(Me)diaSubType|(Ca)pacity      |(C)har.Set          |(L)abels      |(R)ecfm    |Size          |
|____________|______________|______________|________________|____________________|______________|___________|______________|
|F=File type|C=Confidential|00=Unknown     |00=Unknown      |A=ASCII             |A=ANSI  1=A v1|D=Variable|B=bytes       |
|           |O=Open        |03=3.5 disk    |12=1.2M 14=1.44M|E=EBCDIC            |3=A v3  4=A v4|F=Fixed   |K=1024B       |
|Vlc=Valoc  |R=Restricted  |05=5.25 disk   |20=200  25=256K |M=Multipunch        |U=A+user label|S=Spanned |M=1048576B    |
|           |S=Secret      |06=CD-ROM      |36=360K 51=512K |I=E+binary          |D=DOS   O=OS  |U=Undef.  |G=1073741824B|
|#V=#volumes|T=Top Secret  |07=7tr         |55=556  60=600M |K=E+BCD  Z=E+zoned|I=IBM1401     |          |              |
|           |U=Unknown     |08=8 disk      |72=720K 80=800  |C=A+comp R=E+comp   |P=Disk/CD     |          |              |
|           |I=SCI         |09=9tr         |16=1600 32=3200 |N=NIPS   O=OTHER     |N=None        |          |              |
|           |X=Non-data    |12=punch card  |62=6250 37=37871|S=SAS    P=SPSS      |Z=Other       |          |              |
|           |3=Title 13    |18=3480        |75=75742        |B=BCD    Y=BINARY    |X=Unknown     |          |              |
|           |              |36=3490        |80=Punch card   |                    |              |          |              |
|_________________________________________________________________________________________________________________________|
F Vlc  VBAR   sn FSQ NSXT ID #                   A Short Title          VolID  MeCaCL DSNAME          Jobfy crdat   fopdat oper cc
_____________________________________________________________________________________________________________________________________
B05744   1821 01 001 012-1980-001B               O FOLLOW_THRU_ALL      BB5744  O09C  COHORT.EKALL      1981 1980292 2003329 SY1 N
_____________________________________________________________________________________________________________________________________
VOLUME BAR CODE = BB5744  TOTALS:       1  Data Sets
BA327    1843 05 001 029-1979-001B71             O IMPORTS_IA245_71     NA327   O09C  -----------------      1981350 2003329 SY1 N
_____________________________________________________________________________________________________________________________________
VOLUME BAR CODE = NA327   TOTALS:       1  Data Sets
B01179   1802 01 001 197-1973-179B03B84          R DATA_BANK_2C_84      B01179  O09K  RG197.DB2C.Y84    1991 1991121 2003329 SY1 N
_____________________________________________________________________________________________________________________________________
VOLUME BAR CODE = B01179  TOTALS:       1  Data Sets
B02695   1505 01 004    -    -                                          002695  O09A  STF4BXWY.Y9001022 1998 1998336 2003329 SY1 N
_____________________________________________________________________________________________________________________________________
B02695   1505 01 005    -    -                                          002695  O09A  STF4BXWY.Y9001023 1998 1998336 2003329 SY1 N
_____________________________________________________________________________________________________________________________________
B02695   1505 01 006    -    -                                          002695  O09A  STF4BXWY.Y9001100 1998 1998336 2003329 SY1 N
_____________________________________________________________________________________________________________________________________
B02695   1505 01 007    -    -                                          002695  O09A  STF4BXWY.Y9001101 1998 1998336 2003329 SY1 N
_____________________________________________________________________________________________________________________________________
B02695   1505 01 008    -    -                                          002695  O09A  STF4BXWY.Y9001102 1998 1998336 2003329 SY1 N
_____________________________________________________________________________________________________________________________________
B02695   1505 01 009    -    -                                          002695  O09A  STF4BXWY.Y9001103 1998 1998336 2003329 SY1 N
_____________________________________________________________________________________________________________________________________
B02695   1505 01 010    -    -                                          002695  O09A  STF4BXWY.Y9001104 1998 1998336 2003329 SY1 N
_____________________________________________________________________________________________________________________________________
B02695   1505 01 002    -    -                                          002695  O09A  STF4BXWY.Y9001020 1998 1998316 2003329 SY1 N
_____________________________________________________________________________________________________________________________________
B02695   1505 01 003    -    -                                          002695  O09A  STF4BXWY.Y9001021 1998 1998316 2003329 SY1 N
_____________________________________________________________________________________________________________________________________
T02695   1505 01 001 266-1990-999A               O EDGAR_1990_JUN_6     002695  O09C  NARA.TAPE.JUN0690      1990157 2003329 SY1 N
_____________________________________________________________________________________________________________________________________
VOLUME BAR CODE = 002695  TOTALS:       10  Data Sets
M03000   1842 01 001 218-1976-026A               O SACCOACT_1965_1973   N03000  O09N  SACOACTS               1975303 2003329 SY1 N
_____________________________________________________________________________________________________________________________________
VOLUME BAR CODE = N03000  TOTALS:       1  Data Sets
BSIA19   1844 01 019 306-1980-014I7614325256SP   O I7614_325256SP       USIA19  O09   US.I7614.SP325256 1985 1985000 2003329 SY1 N
_____________________________________________________________________________________________________________________________________
```

```
BSIA19   1844 01 018 306-1980-014I7614325256SP   O I7614_325256SP       USIA19  O09   US.I7614.SP325256 1985 1985000 2003329 SY1 N
BSIA19   1844 01 014 306-1980-014I7724740013SP   O I7724_740013SP       USIA19  O09   US.I7724.SP740013 1985 1985000 2003329 SY1 N
BSIA19   1844 01 033 306-1980-014I7725690411RS   O I7725_690411RS       USIA19  O09   US.I7725.RS690411 1985 1985000 2003329 SY1 N
BSIA19   1844 01 026 306-1980-014I7725670411RS   O I7725_670411RS       USIA19  O09   US.I7725.RS670411 1985 1985000 2003329 SY1 N
BSIA19   1844 01 028 306-1980-014I7725630411RS   O I7725_630411RS       USIA19  O09   US.I7725.RS630411 1985 1985000 2003329 SY1 N
|
|
|
|
|
|
BSIA19   1844 01 023 306-1980-014I7527380256RS   O I7527_380256RS       USIA19  O09   US.I7527.RS380256 1985 1985000 2003329 SY1 N
BSIA19   1844 01 024 306-1980-014I7704200210SP   O I7704_200210SP       USIA19  O09   US.I7704.SP200210 1985 1985000 2003329 SY1 N
BSIA19   1844 01 025 306-1980-014I7725670411RS   O I7725_670411RS       USIA19  O09   US.I7725.RS670411 1985 1985000 2003329 SY1 N
```

Figure 158: Annual Selection Volume Report

3. Processing Status report similar to the line list reports, described in Section 19.1.1, which lists the volumes and files which have not been processed yet [fopcc = N] with a subtotal of the number of volumes in this category; then, following a page break, those volumes and files which have failed [fopcc = F or A] with a subtotal of the number of volumes in this category; and then those which were successful with no errors [fopcc = S] with a subtotal of the number in this category; and, at the end of the report, a one-line summary of the number of volumes in each category. This report also includes the file operation date, file operator, and file operation completion code of the successful or last unsuccessful test and the file operation review data and file operation reviewer for each volume and file tested. It is possible to write the "processing status report" to a file as well as to paper. A sample Processing Status report is shown in Figure 159: Annual Sample Processing Status Report.

!ARCHIVAL PRESERVATION SYSTEM (APS) Annual Sample Processing Status Report Date: 2004/11/0025

Columns	(A)ccess	(Me)diaSubType	(Ca)pacity	(C)har.Set	(L)abels	(R)ecfm	Size
F=File type	C=Confidential	00=Unknown	00=Unknown	A=ASCII	A=ANSI 1=A v1	D=Variable	B=bytes
	O=Open	03=3.5 disk	12=1.2M 14=1.44M	E=EBCDIC	3=A v3 4=A v4	F=Fixed	K=1024B
Vlc=Valoc	R=Restricted	05=5.25 disk	20=200 25=256K	M=Multipunch	U=A+user label	S=Spanned	M=1048576B
	S=Secret	06=CD-ROM	36=360K 51=512K	I=E+binary	D=DOS O=OS	U=Undef.	G=1073741824B
#V=#volumes	T=Top Secret	07=7tr	55=556 60=600M	K=E+BCD Z=E+zoned	I=IBM1401		
	U=Unknown	08=8 disk	72=720K 80=800	C=A+comp R=E+comp	P=Disk/CD		
	I=SCI	09=9tr	16=1600 32=3200	N=NIPS O=OTHER	N=None		
	X=Non-data	12=punch card	62=6250 37=37871	S=SAS P=SPSS	Z=Other		
	3=Title 13	18=3480	75=75742	B=BCD Y=BINARY	X=Unknown		
		36=3490	80=Punch card				

F	Vlc	VBAR	sn	FSQ	NSXT	ID #	A	Short Title	VolID	MeCaCL	DSNAME	Jobfy	crdat	fopdat	oper	cc
B	05744	1821	01	001	012	1980-001B	O	FOLLOW_THRU_ALL	BB5744	O09C	COHORT.EKALL	1981	1980292	2003329	SY1	N
B	A327	1843	05	001	029	1979-001B71	O	IMPORTS_IA245_71	NA327	O09C	----------		1981350	2003329	SY1	N
B	01179	1802	01	001	197	1973-179B03B84	R	DATA_BANK_2C_84	B01179	O09K	RG197.DB2C.Y84	1991	1991121	2003329	SY1	N
B	02695	1505	01	004	-	-			002695	O09A	STF4BXWY.Y9001022	1998	1998336	2003329	SY1	N
B	02695	1505	01	005	-	-			002695	O09A	STF4BXWY.Y9001023	1998	1998336	2003329	SY1	N
B	02695	1505	01	006	-	-			002695	O09A	STF4BXWY.Y9001100	1998	1998336	2003329	SY1	N
B	02695	1505	01	007	-	-			002695	O09A	STF4BXWY.Y9001101	1998	1998336	2003329	SY1	N
B	02695	1505	01	008	-	-			002695	O09A	STF4BXWY.Y9001102	1998	1998336	2003329	SY1	N
B	02695	1505	01	009	-	-			002695	O09A	STF4BXWY.Y9001103	1998	1998336	2003329	SY1	N
B	02695	1505	01	010	-	-			002695	O09A	STF4BXWY.Y9001104	1998	1998336	2003329	SY1	N
B	02695	1505	01	002	-	-			002695	O09A	STF4BXWY.Y9001020	1998	1998316	2003329	SY1	N
B	02695	1505	01	003	-	-			002695	O09A	STF4BXWY.Y9001021	1998	1998316	2003329	SY1	N
T	02695	1505	01	001	266	1990-999A	O	EDGAR_1990_JUN_6	002695	O09C	NARA.TAPE.JUN0690		1990157	2003329	SY1	N
M	03000	1842	01	001	218	1976-026A	O	SACCOACT_1965_1973	N03000	O09N	SACOACTS		1975303	2003329	SY1	N
B	SIA19	1844	01	019	306	1980-014I7614325256SP	O	I7614_325256SP	USIA19	O09	US.I7614.SP325256	1985	1985000	2003329	SY1	N
B	SIA19	1844	01	018	306	1980-014I7614325256SP	O	I7614_325256SP	USIA19	O09	US.I7614.SP325256	1985	1985000	2003329	SY1	N
B	SIA19	1844	01	014	306	1980-014I7724740013SP	O	I7724_740013SP	USIA19	O09	US.I7724.SP740013	1985	1985000	2003329	SY1	N
B	SIA19	1844	01	033	306	1980-014I7725690411RS	O	I7725_690411RS	USIA19	O09	US.I7725.RS690411	1985	1985000	2003329	SY1	N

```
BSIA19   1844 01 026 306-1980-014I7725670411RS   O I7725_670411RS       USIA19  O09   US.I7725.RS670411 1985 1985000 2003329 SY1 N
BSIA19   1844 01 028 306-1980-014I7725630411RS   O I7725_630411RS       USIA19  O09   US.I7725.RS630411 1985 1985000 2003329 SY1 N
BSIA19   1844 01 021 306-1980-014I7614325256RS   O I7614_325256RS       USIA19  O09   US.I7614.RS325256 1985 1985000 2003329 SY1 N
BSIA19   1844 01 020 306-1980-014I7614325256SP   O I7614_325256SP       USIA19  O09   US.I7614.SP325256 1985 1985000 2003329 SY1 N
BSIA19   1844 01 022 306-1980-014I7527380256RS   O I7527_380256RS       USIA19  O09   US.I7527.RS380256 1985 1985000 2003329 SY1 N
BSIA19   1844 01 023 306-1980-014I7527380256RS   O I7527_380256RS       USIA19  O09   US.I7527.RS380256 1985 1985000 2003329 SY1 N
BSIA19   1844 01 024 306-1980-014I7704200210SP   O I7704_200210SP       USIA19  O09   US.I7704.SP200210 1985 1985000 2003329 SY1 N
BSIA19   1844 01 025 306-1980-014I7725670411RS   O I7725_670411RS       USIA19  O09   US.I7725.RS670411 1985 1985000 2003329 SY1 N
BSIA19   1844 01 042 306-1980-014I7713310013SP   O I7713_310013SP       USIA19  O09   US.I7713.SP310013 1985 1985000 2003329 SY1 N
BSIA19   1844 01 027 306-1980-014I7725630411RS   O I7725_630411RS       USIA19  O09   US.I7725.RS630411 1985 1985000 2003329 SY1 N
F Vlc  VBAR   sn FSQ NSXT ID #                  A Short Title          VolID  MeCaCL DSNAME           Jobfy crdat   fopdat oper cc

Number of volumes for vopcc='S' = 0
Number of volumes not yet processed=384, failed=0, successful=0

FILE OPERATION REVIEW DATE =          FILE OPERATION REVIEWER =
```

Figure 159: Annual Sample Processing Status Report

19.4 System Generated Reports

System generated reports include reports generated at the completion of a copy, compare or backup jobs. All system generated reports were discussed in their respective sections. For details of a specific system generated report, reference the end of the section related to the needed report. To get details about the Tape Merge report, for example, refer to Chapter 13, TAPE MERGE FUNCTIONS.

What This Chapter Contains

This chapter contains the following information:

- Setting Up Job Preferences
- Setting Up Char Set Preferences
- Setting Up Environment Preferences
- Setting Up Printing Preferences
- Saving and Reloading Configuration

20 APS CONFIGURATION

The preferences dialog box allows the user to set all of the APS configurable options. It can be obtained at any time by selecting File → *Options* from the APS menu, as described in Section 3.1. The preferences dialog box contains four tabs:

1. Job: contains options pertaining to tape copying;
2. Char set: contains options pertaining to ASCII/EBCDIC conversions;
3. Environment: contains options pertaining to the general operation of APS; and
4. Printing: contains options pertaining to report and barcode printing.

20.1 Job Preferences

The Job tab of the preferences dialog box prompts the user to enter the following fields:

1. Reblocking mode: Specifies the output file block size. Can be set so that all output blocks are approximately 12000 bytes, or so that output blocks have the same size as input blocks or to force the user to specify the block size during the copy job;
2. User-label mode: Specifies whether or not to include user labels on the output tape. Can be set to discard the user labels, to copy them (translating from ANSI to OS or vice-versa as appropriate), or to discard them but to create a file note. If a file note is created it is given a file note class (fnclass) of "UL";
3. Input label mode: Specifies whether or not the system is to interpret labels found on the input tape. Can be set to interpret labels, or to bypass labels. If labels are bypassed the user will be required to enter the block size, record size and other characteristics of the input tape. A file note will be created for each file copied indicating that the label was bypassed. (Even if labels are bypassed, they are read and their contents used to obtain default values for the tape characteristics.);
4. Output label type: Specifies whether or not to include user labels on the output tape. Can be set to discard the user labels, to copy them (translating from ANSI to OS or vice-versa as appropriate), or to discard them but to create a file note. If a file note is created it is given a file note class (fnclass) of "UL";
5. File naming mode: Can be set to assign output files the same name as input files, or to require the user to enter the file names or to automatically generate file names in the format FL###### where ###### is the sequence number of the file;
6. File copying mode: Specifies whether the system is to copy (or compare) all files on a volume or to pause before reading each file to allow the user to specify the number of the file (on the volume) to read;

7. Input and Output record delimiters: Specifies the string used to signify the end of a record when copying files with text type records. Any ASCII character can be entered as well as '\f' for form feed, '\r' for carriage return and '\n' for newline. In addition, any other character can be entered as '\##' where ## is any decimal number, e.g. EBCDIC newline would be entered as '\05'; and

8. Tape error mode: Specifies how to handle tape errors. Can be set to record errors without stopping or to only stop if unrecoverable (hard) error occurs or to stop when any error occurs. If the tape error mode is set to record errors without stopping and an error is encountered, a message is displayed for five seconds after which the copy job continues (entries may be added to the error table depending on the current operation and settings). If the tape error mode is set to only stop on unrecoverable errors, when a recoverable (soft) error is encountered a brief message is displayed but when an unrecoverable read error is encountered the system stops and displays the Error Dialog box.

To configure Job settings choose File → *Options* from the APS menu, to display the preferences dialog box. Then click on the Job tab. The Preferences dialog box for Job Preferences Block is shown in Figure 160: Preferences Dialog Box/ Job Preferences Block.

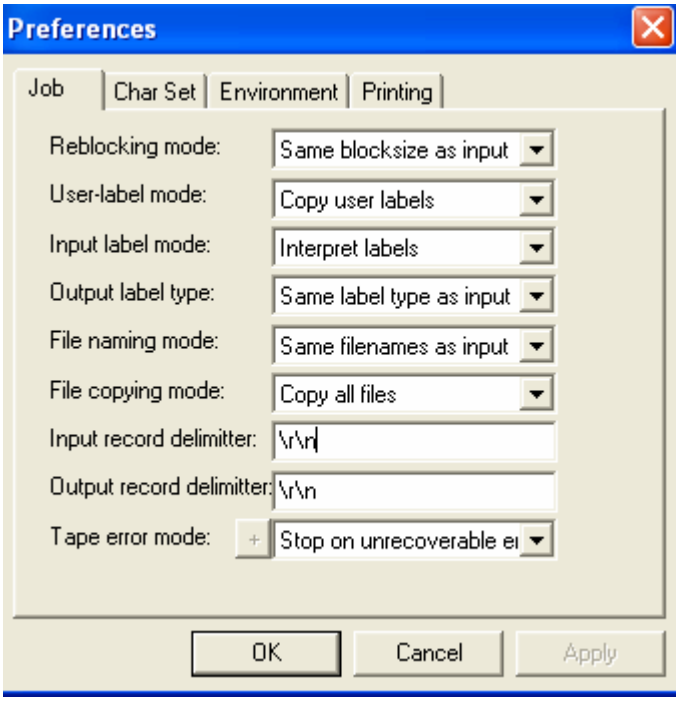


Figure 160: Preferences Dialog Box/ Job Preferences Block

20.2 Char Set Preferences

The Char Set tab allows user to set values for character conversions.

1. The number of records/blocks to scan determines how many records/blocks APS will read before copying to determine if the file is ASCII, EBCDIC or BINARY, if all the characters in the record/block are ASCII, then the file is ASCII, if all are EBCDIC then the file is EBCDIC, else the file is considered to be BINARY;
2. Default conversion specifies what character to use when there is no valid conversion from ASCII to EBCDIC or from EBCDIC to ASCII. Character should be entered using its hexadecimal value. E.g. ASCII space would be entered as 20, EBCDIC space as 40;
3. Treat Null as text; if this box is checked and a null byte is found in a file, then the file will be treated as ASCII or EBCDIC depending on other bytes in the file. If box is not checked the file will be treated as binary.

To configure Char Set settings choose File → Options from the APS menu, to display the preferences dialog box. Then click on the Char Set tab. The dialog box is shown in Figure 161: Preferences Dialog Box / Char Set Preferences Block.

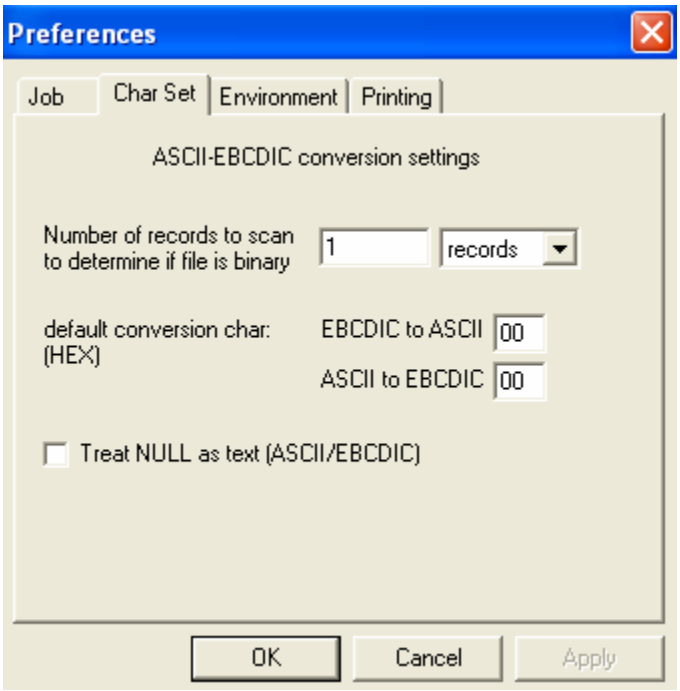


Figure 161: Preferences Dialog Box / Char Set Preferences Block

20.3 Environment Preferences

The environment tab of the preferences dialog box prompts the user to enter the following fields:

4. Error message display time, controls the amount of time an error message displays on the screen, value entered in milliseconds;
5. Job report font size, controls the font size for the text;
6. Space at bottom of dump report, controls available space at bottom of dump report;
7. Auto blocking threshold, controls the number of consecutive blocks to read/write before switching from variable to Automatic block mode;
8. Prompt for ODBC source when logging on, controls the log-on procedure, if box is checked, then user is prompted to select a data source prior to logging on, reference 4.1; and
9. CD-R temporary directory, this is the directory where APS stores temporary files before they are copied to a CD-R.

To configure Environment settings choose File → *Options* from the APS menu, to display the preferences dialog box. Then click on the Environment tab. The dialog box is shown in Figure 162: Preferences Dialog Box / Environment Preferences Block.

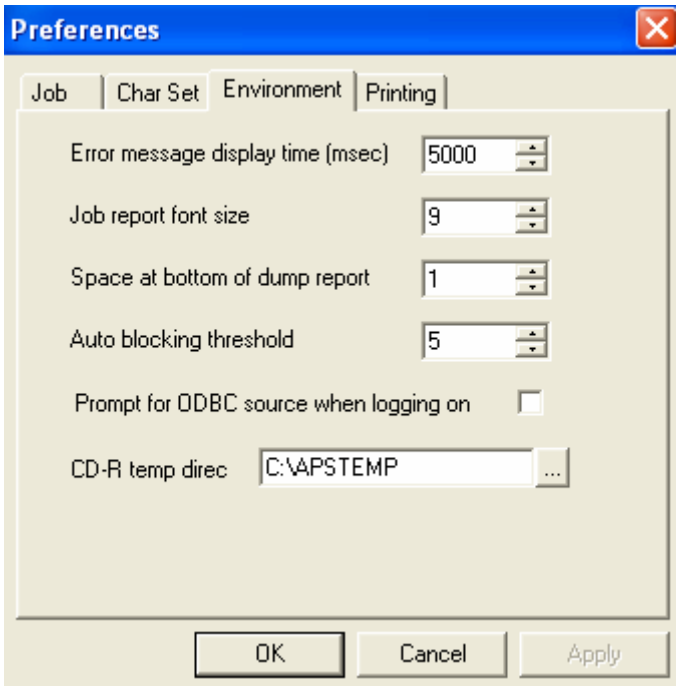


Figure 162: Preferences Dialog Box / Environment Preferences Block

20.4 Printing Preferences

The APS system allows the configuration of two printers, the report printer and the label printer. All reports generated by any process are sent to the report printer. Bar code labels are sent to the label printer. This allows two printers to be simultaneously connected to the APS network, one containing labels and the other white paper. The APS machines are not restricted to printing only on local printers but can print to any printer connected to the network.

Reports can be sent either to a physical printer, a print file or both. Check the appropriate box to enable printing to that device. Reports generated by a copy or compare job can are formatted according to the current report printing mode. The setting is adjusted by selecting the appropriate type from the Report type drop-down list box, options available are, 'one page per file', 'one line per file', 'one line per file with path' and 'no report'.

To set which physical printer reports or labels will be sent to, press either the Setup report printer button or the Setup label printer button. APS will display the standard Windows print setup dialog box to configure the desired printer.

Print files are sent to the directory specified where they can be managed by the APS printer server. This directory can be local or can be a shared network directory on a remote computer. Each file has a file name in the form of SFFCQQQQ.UUU. Where S = APS system number, FF = job fiscal year, C=Category (P=preservation, D=database), QQQQ = sequence number, UUU = userid. The files are in plain ASCII format with all header and footer lines preceded by the '!' character.

To configure printer settings choose File → Options from the APS menu, to display the preferences dialog box. Then click on the Printing tab. This dialog box is shown in Figure 163: Preferences Dialog Box / Printing Preferences Block

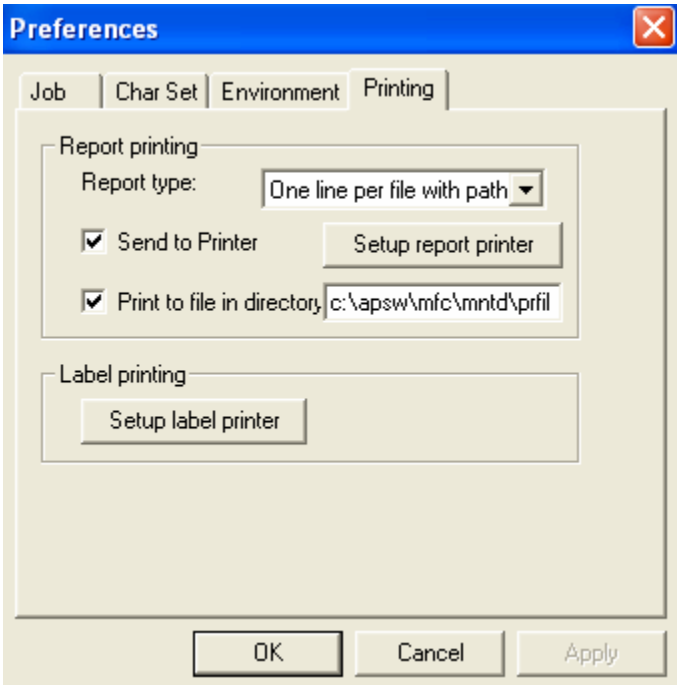


Figure 163: Preferences Dialog Box / Printing Preferences Block

20.4.1 Save and Reload Configuration

To save the current APS configuration to the configuration file, choose '*Save config'* from the APS File menu, as described in Section 3.1. The current settings will now be the default settings every time APS is started. To reload the settings contained in the configuration file without restarting APS, choose '*Reload config'* from the APS File menu, you should note that Reload Configuration works only if the changed Configuration was not saved.

What This Chapter Contains

This chapter contains the description of the Process Used to Print Barcodes.

21 PRINT BARCODES

To access the Print Barcodes function, chose Menu Item *Handheld* → *Print Barcodes* from the Main Menu, as described in Section 3.1. A screen displays to give you the option to enter Starting Barcode number and Number to print, enter the required numbers and press Ok. The dialog box is shown in Figure 164: Print Barcodes Dialog Box.

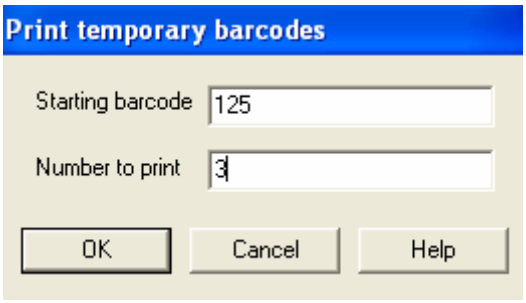


Figure 164: Print Barcodes Dialog Box

What This Chapter Contains

This chapter presents descriptions of the Tables and Fields in the APS Catalog Database (CDB).

22 CATALOG DATABASE (CDB) DESCRIPTION

This section explains how the APS catalog database, or CDB, is organized. This CDB can be examined or altered using the View/Edit screen. The View/Edit screen and other functions for managing the CDB are described in Chapter 16.

The database is divided into primary data structures and secondary data structures. Primary data structures store information about files and the media they are stored on. Secondary data structures store information about APS menus, options and users. Only APS Administrators are allowed to modify secondary data structures.

The primary and secondary database structures are described in the subsections to follow. A list of individual database fields is included for the primary database structures.

22.1 Primary Data Structures

The APS database primary data structure tables are listed in Table 4. Individual fields are listed in Table 5. The secondary data structures store information about files and the media they are stored on. They can be modified using the *Catalog->View/Edit* command, as described in Section 16.1.

Table 4: Primary Data Structure Tables

Table Name	Expanded Table Name	Description
FM	File Master Table	Information about files
FS	File Segment Table	Information about file segments
FT	File Transaction Table	Records every transaction performed on every file
FN	File Notes Table	Operator notes for each file
ER	Error Table	Records tape read/write errors
MTD	Metadata Table	Information about files containing images
VM	Volume Master Table	Information about storage volumes
VT	Volume Transaction Table	Records every transaction performed on every volume.
VN	Volume Notes table	Operator notes for each volume

Table 5: Primary Data Structure Fields

Field Name	Table	Conceptual Name	Definition
access	FM	Access	The file's availability, i.e. level of restriction for use.
accitem	FM	NARA Accession Number Item Number	NARA Accession Number Item Number
accoff	FM	NARA Accession Number Office Prefix	NARA Accession Number Office Prefix
accyear	FM	NARA Accession Number Year	NARA Accession Number Year
acronym	FM	Acronym or Code	Acronym or code
alrecctef	ER	Affected Logical Record Cnt Est Flg	Indicates whether the Affected Logical Record Count is estimated or actual.
Bcp	VM	Barcode Printed	Yes if barcode label has been printed, No if barcode label has not been printed.
begdat	FM	Beginning date	Beginning date
blksiz	FM	Block Size	The number of bytes in a block which is a collection of contiguous records recorded as a unit and separated by interblock gaps with each block containing one or more records.
charset	FM	Character Set	Unique arrangement of binary codes used to determine the characters represented.
crdat	FM	Creation Date	Date (YYYYDDD) on which the file was written onto this volume.
ctrlflg	FM	Control Character Flag	Presence of print operation control characters.
Dwsl	FM	Date written same as label? [y/n]	Was the file actually written on the date in the tape label?
Edat	ER	Error Date	Date (YYYYDDD) on which the permanent read error occurred or the record(s) was deleted.
element	ER	Metadata element	Contains type of metadata describing a file.
enddat	FM	Ending date	Ending date
error	ER	Error Type	Indicates whether segment contains read errors or records have been deleted.
fblkct	FM	File Block Count	Number of physical blocks in the file.
fbytct	FM	File Byte Count	Number of bytes in the file. For files not processed on APS, this may be an estimate which will be indicated via the File Size Estimated Flag.
fbytctef	FM	File Byte Count Estimated Flag	Indicates whether the file byte count is estimated or actual.
Fid	FM	File Identifier	An identifier in the first file header label and the first file trailer label which is read to verify that the correct file is being used.If the volume does not have standard labels, the file is assigned an external identifier.
flrecct	FM	File Logical Record Count	The number of logical records in the file.
fnauth	FN	File Note Author	Assigned initials of the person authoring the file note.
fnclass	FN	File Note Class	Note classification
fncol	FN	File Note Column Number	The column's item number to which the note refers.
fndat	FN	File Note Date	Date (YYYYDDD) the file note was entered.
fnlno	FN	File Note Line	The sequence number of the line within the note beginning with 01.

Field Name	Table	Conceptual Name	Definition
		Number	
fnote	FN	File Note	Description of technical or preservation issues specific to the file.
Fop	FT	File Operation	Type of on-line activity performed at the file level.
fopcc	FT	File Operation Completion Code	Indicates the file operation's result, i.e. success or a general cause of failure.
fopdat	FT	File Operation Date	Date (YYYYDDD) the file operation was performed.
foper	FT	File Operator	Assigned initials of the person performing the file operation.
foprev	FT	File Operation Reviewer	Assigned initials of the person reviewing the file operation.
foprevdat	FT	File Operation Review Date	Date (YYYYDDD) the file operation was reviewed.
frcverct	FM	File Recovered Error Count	Number of of blocks with temporary read errors encountered in the file which were recovered by additional reads or cleanings.
Free	VM	Freespace Percent	The percent of freespace remaining on the volume.
fseqno	FM, FS	File Sequence Number	Indicates the relative position of the file on a volume set.
Ftitle	FM	Full title	Full title of file
ftype	FM, FS, FT, FN, MTD	File Type	Identifies type of file.
Fxno	FM, FS, FT, FN, ER, MTD	File XMIS Number	Obtained from the XMIS Data File Register maintained by NSXA. No number is reused regardless of the file's disposition.
jobfy	FM	Preservation Job Fiscal Year	For NARA written file copies, contains the fiscal year (ends 9/30) when written. For non-NARA file written file copies, contains blanks.
jobno	FM	Preservation Job Number	For NARA written file copies, contains the sequence number within the fiscal year when written. For non-NARA file written file copies, contains an abbreviated form of the Preservation Status (#0800). Used to locate the job output for NARA-written copies.
label	VM	Label Type	Type of label recorded on the volume. Labels are records at the beginning of the media and preceding, and also usually following, each file, which are separated from the files and each other by tapemarks and contain information that identifies and describes the data.
Lrecl	FM	Logical Record Length	Number of bytes in a fixed length record or the maximum number of bytes in a variable- or undefined-length record
mdata	MTD	Metadata	Contains value of metadata describing a file.
medcap	VM	Media Capacity	Bits per inch for magnetic tape or bytes per volume for other media.
medlot	VM	Media Lot	Code representing the unique lot, batch, or other control designation assigned by the manufacturer.
medname	VM	Media	Code representing the manufacturer and brand.
medstype	VM	Media Sub-Type	Sub-type of media on which the segment is recorded, i.e. tracks for magnetic tape and physical dimension for other media.
medtype	VM	Media Type	Media on which the segment is recorded.
nfiles	FM	Number of files	The number of individual files contained in or represented by this File Master row. (e.g. for TAR files)

Field Name	Table	Conceptual Name	Definition
origcat	VM	Originating catalog	Identifies on which catalog database (CDB) the volume master entry was created.
origsys	FM	Originating System	System on which the file copy was produced.
pstat	FM	Preservation Status	Indicates whether the file is an agency or NARA copy and whether it has been, should be, or should not be copied or whether the copy has been approved for use.
recfm	FM	Record Format	The record format, specifically, whether lengths are fixed, variable, spanned, undefined, or delimited.
rgnum	FM	NARA Accession Number Record Group Number	NARA Accession Number Record Group Number
sblkct	FS	Segment Block Count	Number of physical blocks in the segment.
sbytct	FS	Segment Byte Count	Number of bytes in the segment. For files not processed on APS, this may be an estimate which will be indicated via the File Size Estimated Flag.
slrecct	FS	Segment Logical Record Count	The number of logical records in the segment.
smlrct	FS	Segment Missing Logical Record Cnt	If known, the number of logical records deleted when the segment was written. If unknown, an estimated number of logical records deleted when the segment was written. See Notes for an explanation of the method of estimation.
smlrctef	FS	Seg Miss Logical Record Cnt Est Flg	Indicate whether the Segment Missing Logical Record Cnt is estimated or actual.
Sno	FS, ER	Segment Number	The order of the volume within a multivolume file which is always 001 for a single volume file.
sortex	FM	Sort Extender	Optional extender for sorting and interrelating files.
sortino	FM	Sort Item Number	Item number used for sorting and interrelating files.
sortrg	FM	Sort Record Group	Record Group assigned for sorting and interrelating files.
sortyr	FM	Sort Year	Fiscal Year used for sorting and interrelating files.
soursys	ER	Source System	System on which a permanent read error occurred subsequent to the file's creation on the originating system.
srcverct	FS	Segment Recovered Error Count	Number of blocks with temporary read errors encountered in the segment which were recovered by additional reads or cleanings.
stblk	ER	Starting Block	Block number at which the permanent read error or the deleted block begins.
stitle	FM	Short Title	A unique short title assigned to a file or identical copies of a file. See [future?] "Short Title Rules and Conventions" for more detailed information.
stlrec	ER	Starting Logical Record	Logical record number at which the permanent read error or deleted record begins.
surcverct	FS	Segment Unrecovered Error Count	Number of blocks in the segment with permanent read errors.
valoc	VM	Volume Assigned Location	The volume's permanently assigned physical location, i.e. the numbered slot within the media rack.
vbar	FS, VM, VT, VN	Volume Bar Code	Unique bar code assigned to a volume using the "3 of 9" (also known as Code 39) symbology.
vid	VM	Volume Identifier	For a volume which has standard labels, the first record following the BOT reflector strip is the volume label (VOL1). This contains

Field Name	Table	Conceptual Name	Definition
			the Volume Identifier which is read by the system to verify that the correct volume is mounted. If the volume does not have standard labels, the volume is assigned an external identifier.
vnauth	VN	Volume Note Author	Assigned initials of the person authoring the volume note.
vnclass	VN	Volume Note Class	Note classification.
vncol	VN	Volume Note Column Number	The column's item number to which the note refers.
vndate	VN	Volume Note Date	Date (YYYYDDD) the volume note was entered.
vnlno	VN	Volume Note Line Number	The sequence number of the line within the note beginning with 01.
Vnote	VN	Volume Note	Description of technical or preservation issues specific to the volume.
Vop	VT	Volume Operation	A discrete off-line activity performed upon a physical volume without referencing a specific file(s).
Vopcc	VT	Volume Operation Completion Code	Indicates the volume operation's result, i.e. success or a general cause of failure.
vopdat	VT	Volume Operation Date	Date (YYYYDDD) volume operation performed.
Voper	VT	Volume Operator	Assigned initials of the person performing the file operation.
vploc	VT	Volume Processing Location	The volume's numbered slot within the media rack or a designated site while out of its assigned location during processing.

22.2 Secondary Data Structures

The APS database secondary data structure tables are listed in Table 6. The secondary data structures store information about APS menus, options and users. They can be modified using the *Catalog->View/Edit* command, as described in Section 16.1. Only APS Administrators are allowed to modify secondary data structure tables.

Table 6: Secondary Data Structure Tables

Table Name	Expanded Table Name	Description
ref	Reference Timing Information	Contains timing information produced by reference copy jobs.
rvw	Reviewer List	Contains an entry for each APS user with Reviewer privileges or better
Sys	System Information	Contains system settings for all APS systems attached to the CDB
tpval	Column Validation Rules Table	Stores field name and field validation rule.
tplist	Drop-Down List Values Table	Stores field name and available values, with description of each value and display order specifications
tperr	Error Message Table	Stores field name and error message to display if validation rules are violated.
tprow	Row Edit Validation Rules	Stores up to three pairs of field names and field validation rules that must all be met for a row modification to be valid.
usr	User List	Contains an entry for each APS user

What This Chapter Contains

This chapter gives a description of a TarFile and Specific Instructions on Creating TAR Files Using the APSTAR Utility.

23 APSTAR

NARA was faced with the issue of preserving volumes that contain hundreds of thousands of bytes, and performing the preservation in a timely manner. A utility known as APSTAR was introduced to assist NARA in performing this task. APSTAR enables APS users to combine multiple files into one TarFile (TAR Archive) with extension ".TAR", and then perform a copy and compare on that file to preserve it. This process cuts down the time required to copy the files – it takes longer to copy them one by one than to copying them when they are included in a Tar file.

23.1 Description of a TarFile (TAR Archive)

A TarFile consists of a Header (1 block = 512 bytes), Data file (contains multiple of 512 bytes) and Trailer (2 blocks = 1024 bytes). The size of a TarFile will always be multiple of 512 bytes. We know that the Header and Trailer have fixed size blocks of respectively 512 and 1024 bytes, then the size of the data file will always be adjusted to be a multiple of 512 bytes; for example, if the data file is 500 bytes, then 12 bytes of null characters will be added to the data file to give it a size of 512 bytes. In another example if the data file is 600 bytes, then 424 bytes of null characters will be added to the data file giving it a size of 1024 bytes (a multiple of 512).

Each TarFile will have one Header per file tarred and one Trailer for the whole TarFile. For example, if we are tarring 5 files, we will have 5 headers (5 x 512 = 2560 bytes), 5 files (total size must be a multiple of 512) and 1 Trailer (1024 bytes).

23.2 Create TarFiles

Now that we know what a TarFile is, the next step is to learn how to create TarFiles. Note that prior to creating TarFiles you must create a directory called "Tar_out" on your c:\ drive, and then create a subdirectory called "tar_temp" under the tar_out directory.

First, the user must setup a directory that contains the files to be tarred. For our example, the directory is "C:\APSTAR_TEST". This directory contains four files as shown in Figure 165: Files to be Tarred.

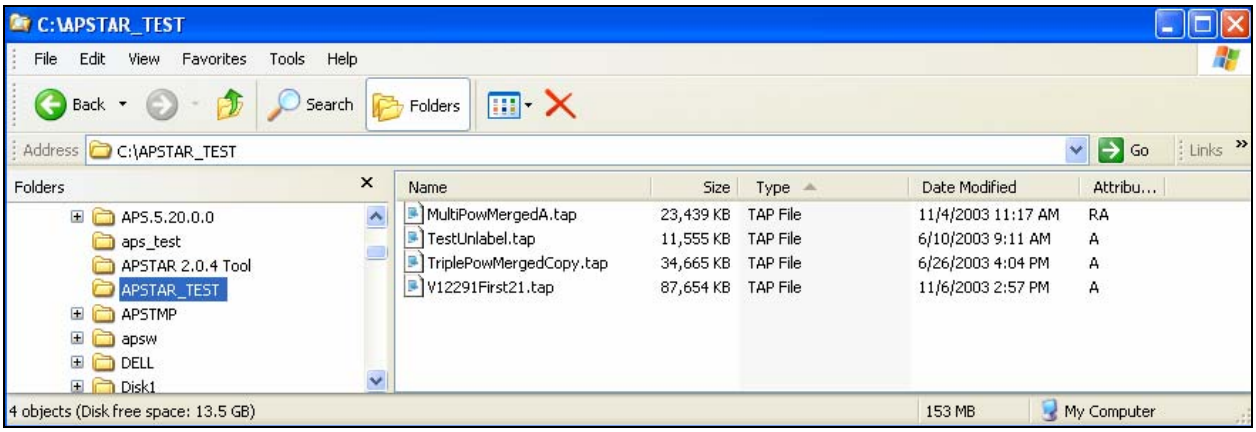


Figure 165: Files to be Tarred

Please note the size of each file; these files have a total size of about 157,313 KB.

Once the files have been prepared under the selected directory, then user must access the APSTAR utility.

You can do so by double clicking the APSTAR icon 

on your desktop, or locating the "APSTAR.EXE" file under your APSTAR directory and double clicking it. When APSTAR is activated, the APSTAR screen will display, included in the image below is the APSTAR menu items. This screen is shown in Figure 166: APSTAR Startup Screen/ Menu Items.

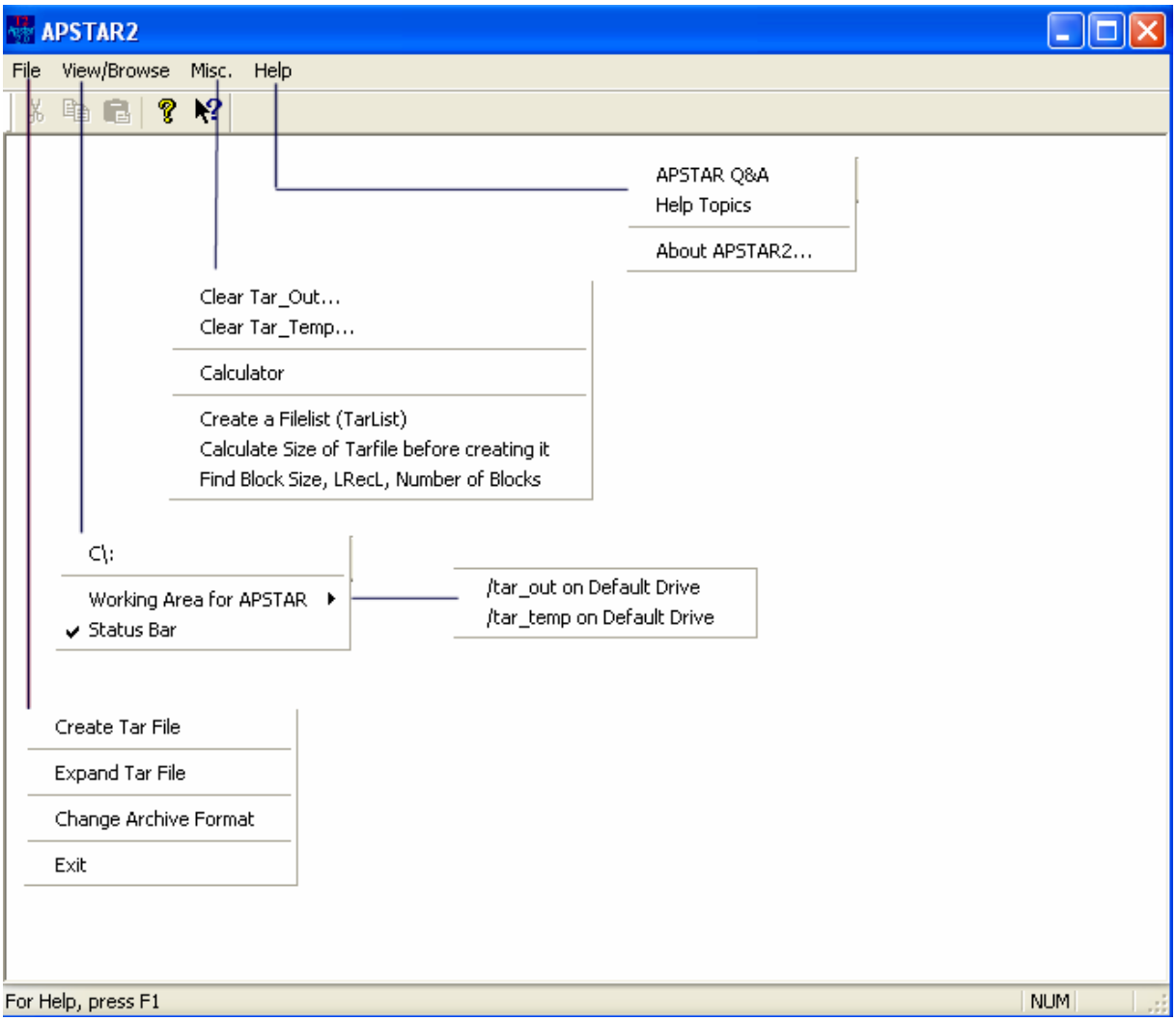


Figure 166: APSTAR Startup Screen/ Menu Items

23.2.1 TarAll Option

To create a Tar File, click on "Create Tar File" from menu item "File"; the Create Tar file screen is displayed. This screen is shown in Figure 167: APSTAR Create Tar File Screen. Note that there are two ways to create TarFiles, TarAll and TarList; both ways will be discussed in this section, starting with the TarAll option.

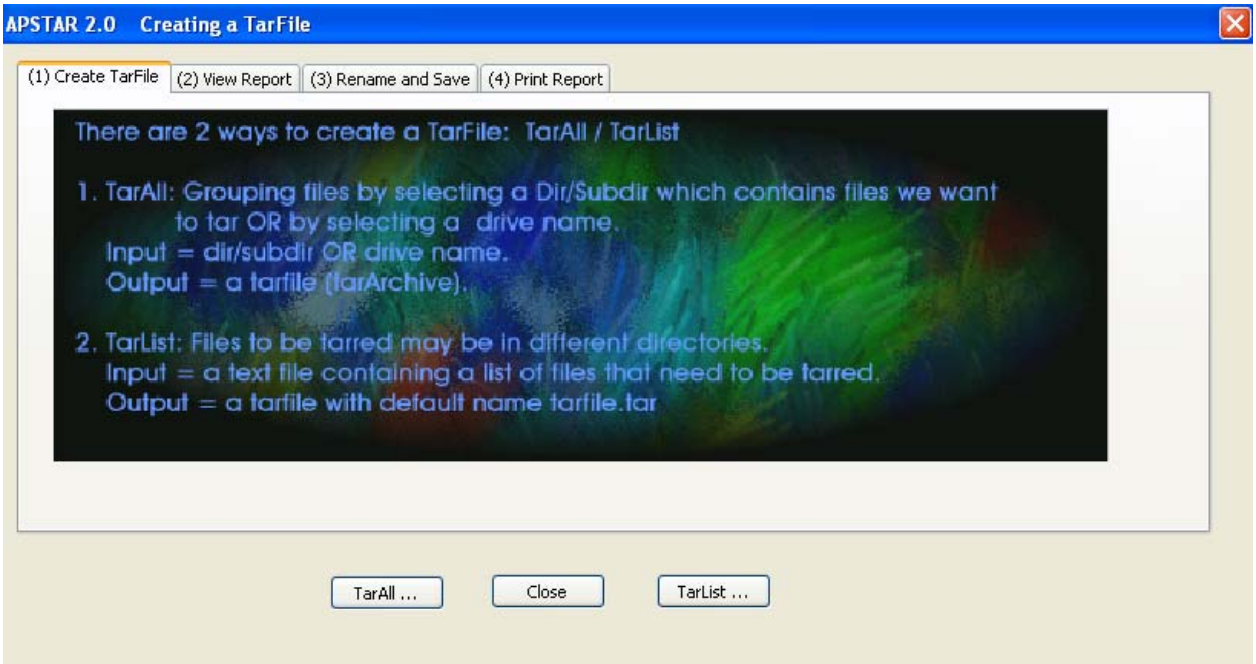


Figure 167: APSTAR Create Tar File Screen

Click on "TarAll" button on the create Tar File screen, this will display a screen allowing user to select the folder to be tarred. This screen is shown in Figure 168: Folder Selection Screen. Note that folder "APSTAR_TEST" is highlighted; this is the folder we setup earlier for our test.

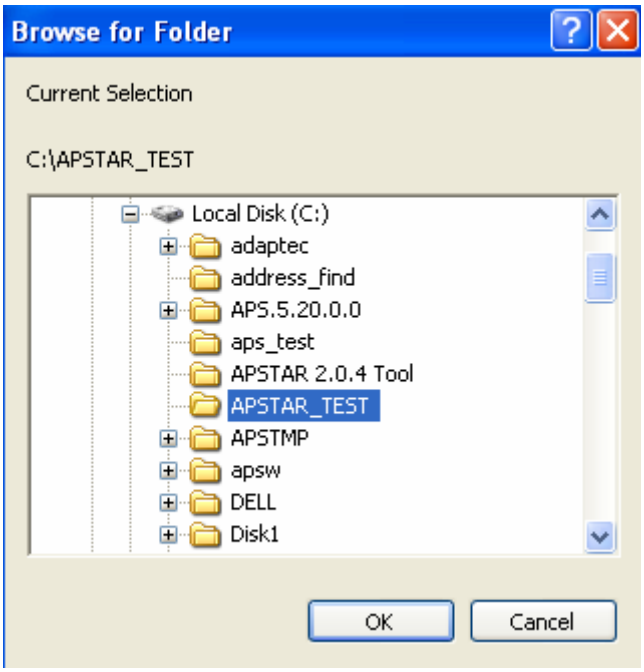


Figure 168: Folder Selection Screen

Click the OK button on the Folder Selection screen; this will display a message to inform you that APSTAR is creating a tar file. The message will display the name and location of the tar file and the name and location of the directory or file used for tarring. This is displayed in Figure 169: APSTAR Information Message.

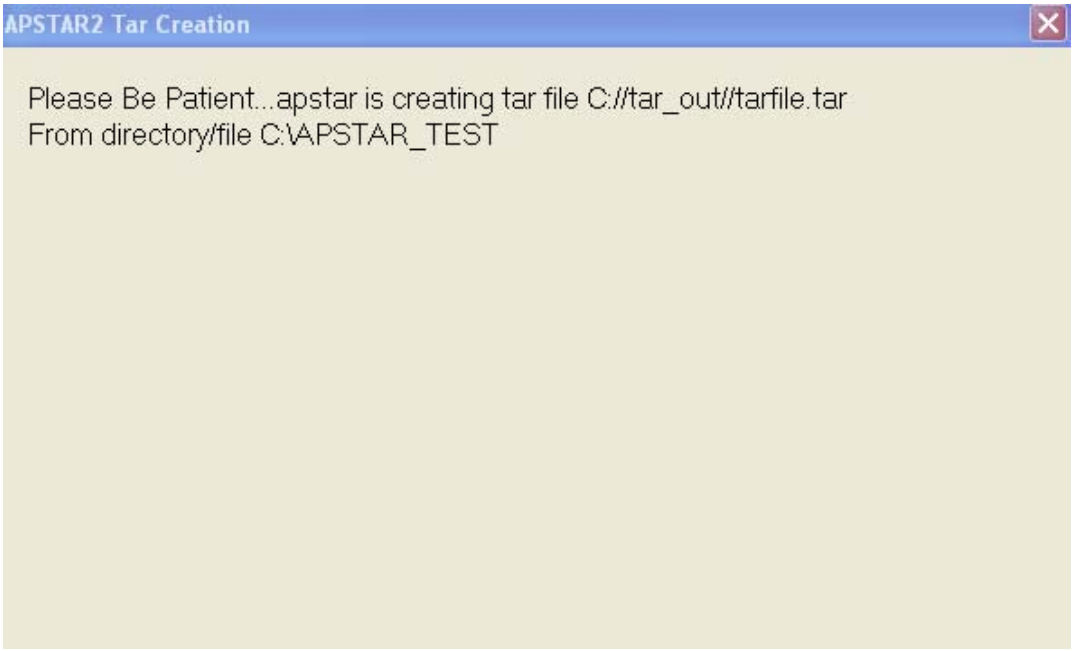


Figure 169: APSTAR Information Message

When APSTAR completes the tarring a message displays to inform you that the tarring is successful. This is shown in Figure 170: APSTAR Confirmation Message.

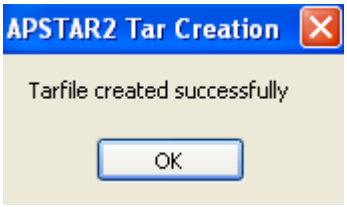


Figure 170: APSTAR Confirmation Message

Click the OK button on the APSTAR confirmation message; this will close the message window. Click on the View Reports tab on the APSTAR Create Tar File screen, as shown in Figure 167: APSTAR Create Tar File Screen. A tab will be displayed allowing user to view reports, as shown in Figure 171: APSTAR View Reports Tab.

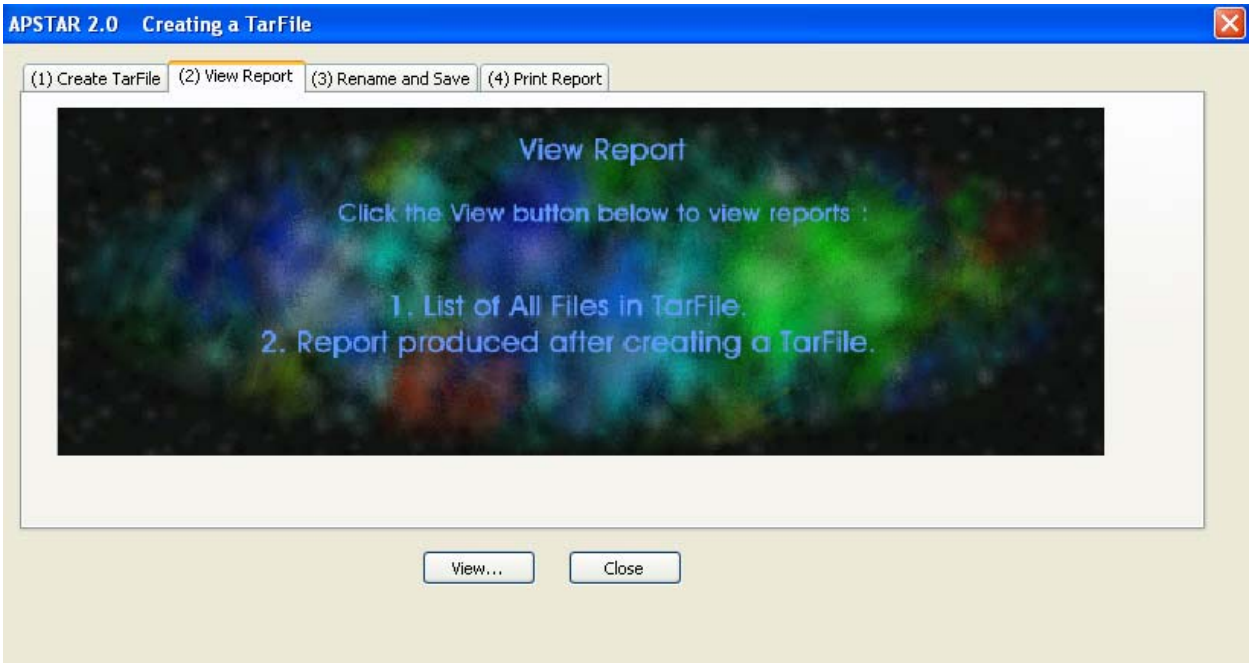


Figure 171: APSTAR View Reports Tab

Click on the View button to view the reports generated by APSTAR. The report displayed will default to Report One. The APSTAR On-Screen Report 1 is shown in Figure 172: APSTAR On-Screen Report1.

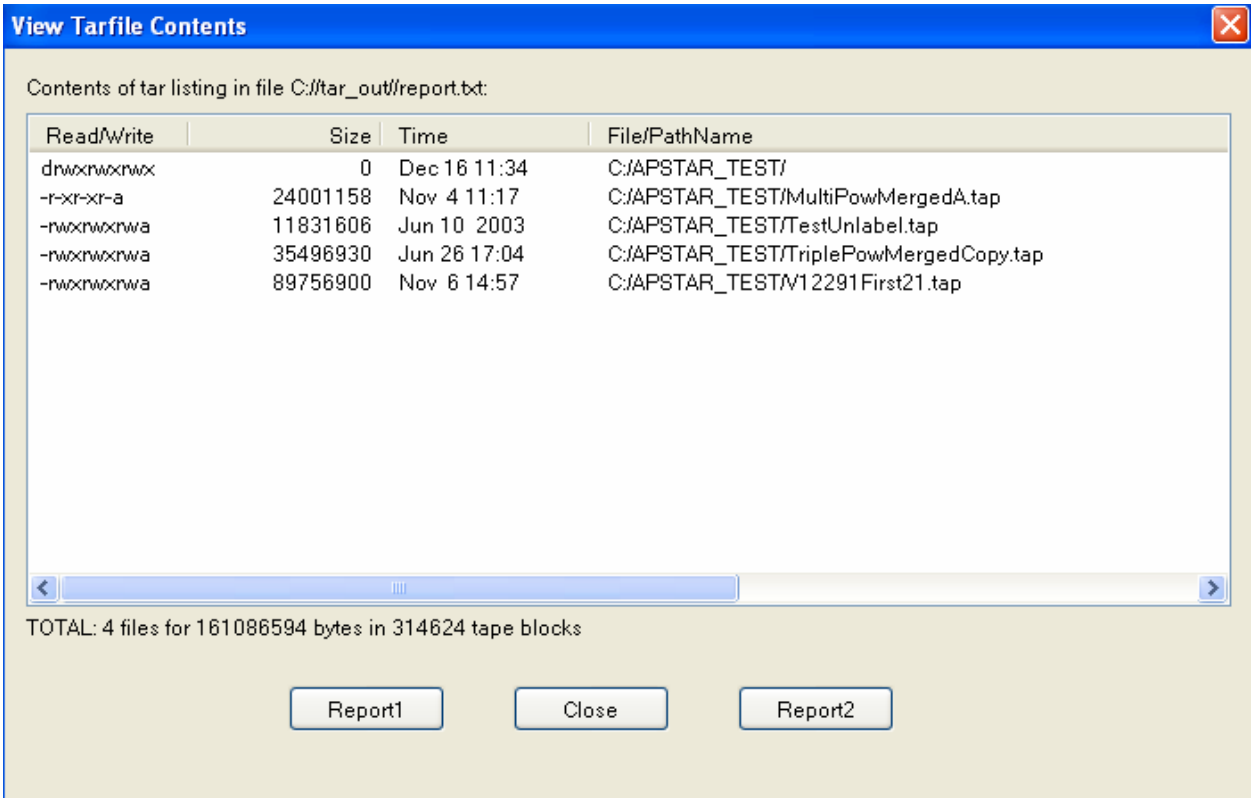


Figure 172: APSTAR On-Screen Report1

Click on the Report2 button to view Report Two generated by APSTAR. This is shown in Figure 173: APSTAR On-Screen Report2

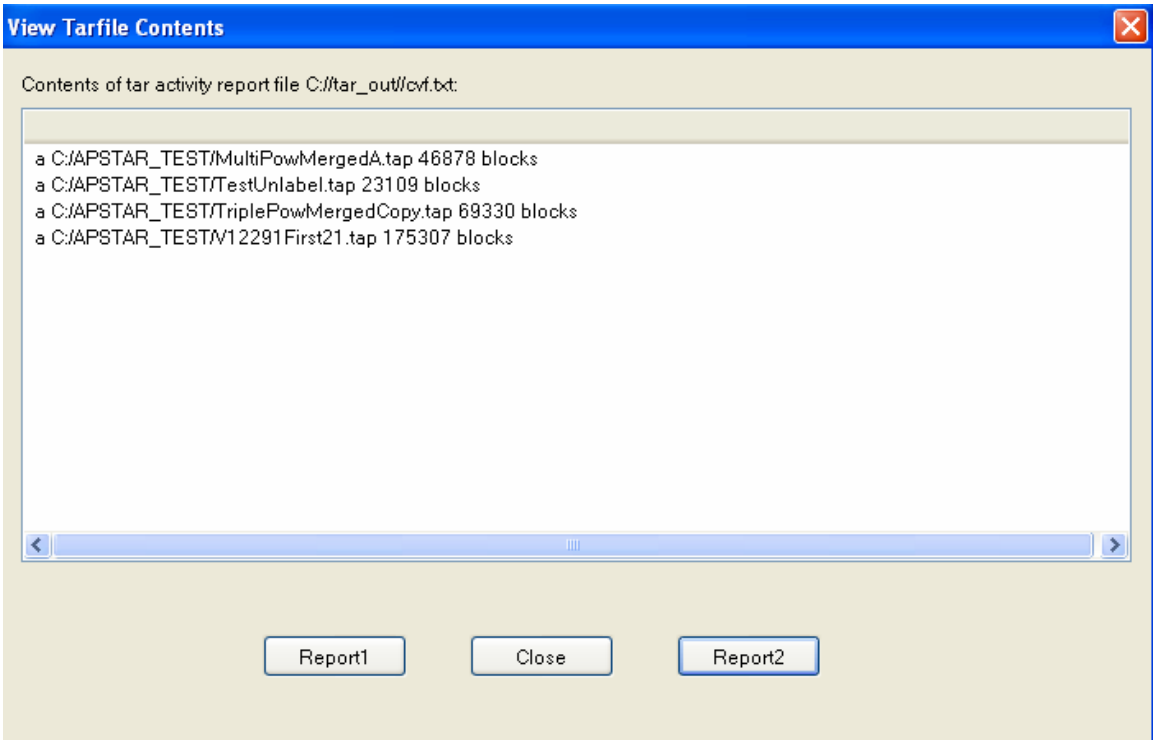


Figure 173: APSTAR On-Screen Report2

Click the Close button to return to APSTAR View Reports tab, as shown in Figure 171: APSTAR View Reports Tab. Click on the Rename and Save tab on the APSTAR Create Tar File screen, as shown in Figure 167: APSTAR Create Tar File Screen. This will display the Rename screen, as shown in Figure 174: APSTAR Rename and Save Tab. Click on the Rename button to change and save the name of the tar file.

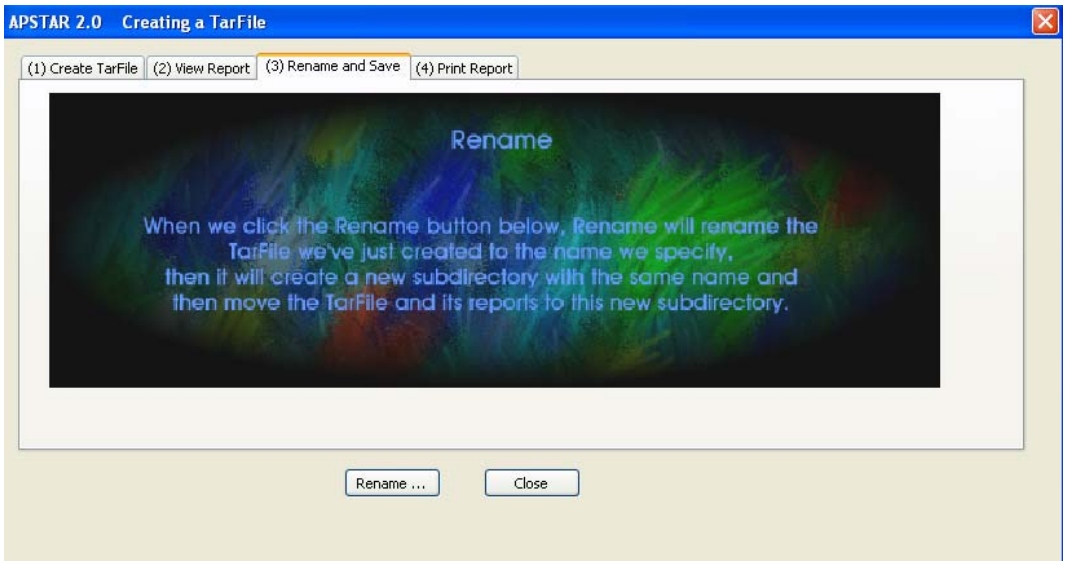


Figure 174: APSTAR Rename and Save Tab

. On the Rename TarFile screen, enter a new name and click the Save button. This is shown in Figure 175: Rename TarFile Screen.

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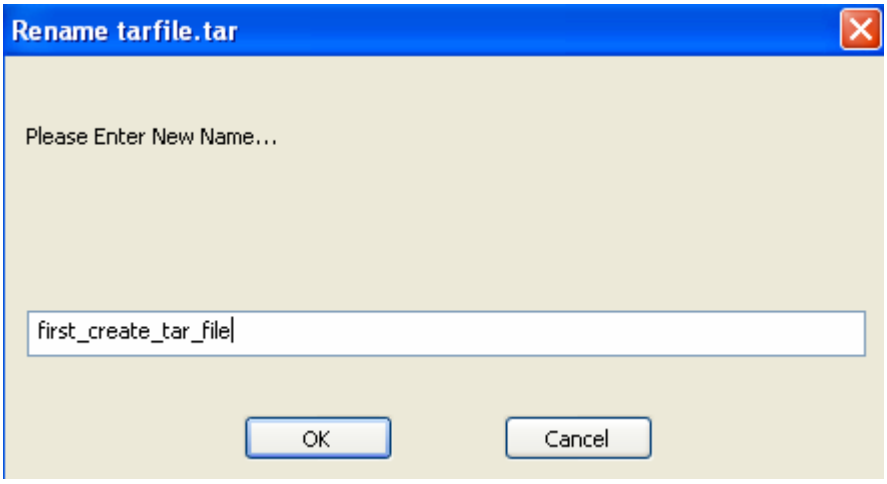

Figure 175: Rename TarFile Screen

A message displays to confirm that the name has been changed and saved. This is displayed in Figure 176: APSTAR Rename File Confirmation. The message displays information about the new subdirectory created; showing its name and contents. Note the new name for the TarFile, Report (with extension RP1) and Report (with extension RP2).

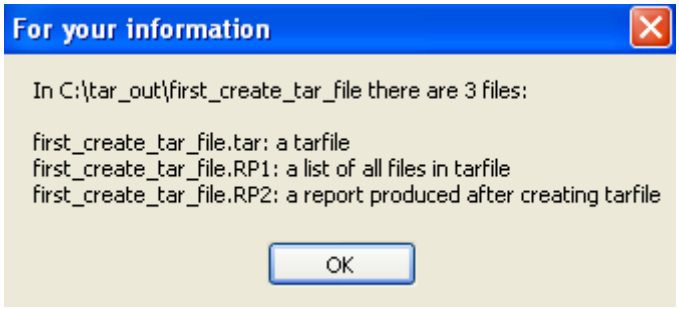

Figure 176: APSTAR Rename File Confirmation

Click the OK button on the message screen to close the message window and this will display the Rename TarFile Screen, as shown in Figure 175: Rename TarFile Screen. Click on the "Print Report" tab, as shown in Figure 177: APSTAR Print Report Tab, which is on the APSTAR Create Tar File screen.

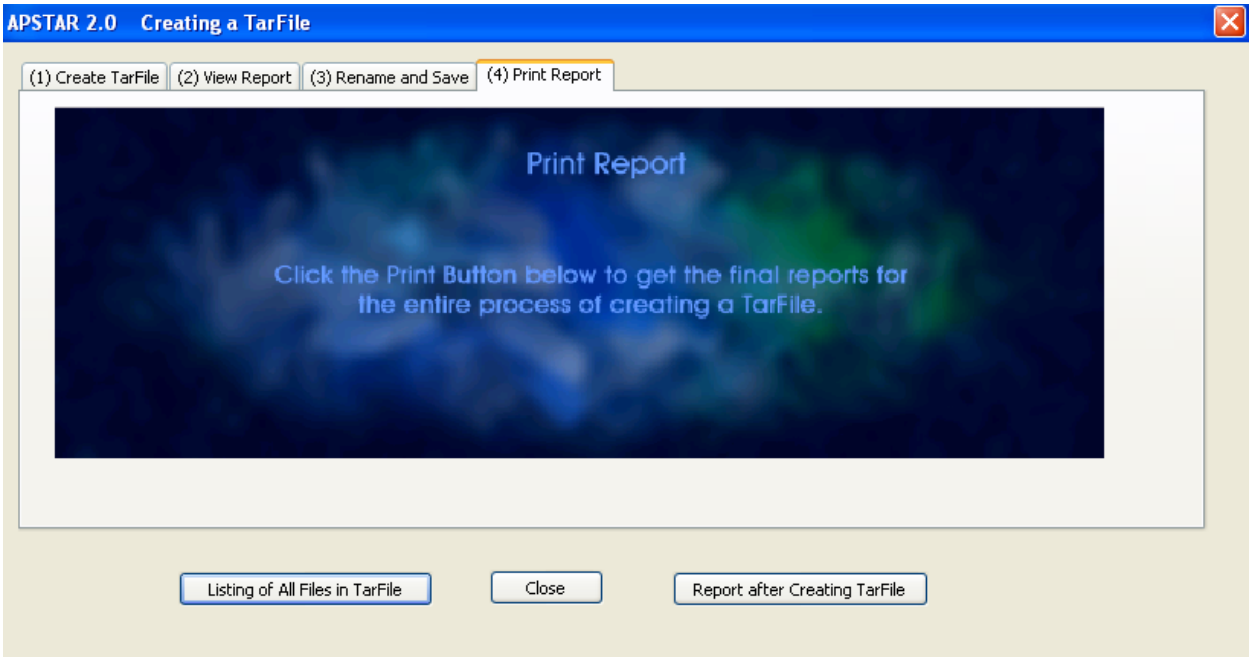

Figure 177: APSTAR Print Report Tab

Click on "Listing of All Files in TarFile" button to create a report that lists all files in the TarFile; this report represents report1 from the View reports tab. Click on "Report after Creating TarFile" button to create a report that represents Report Two from the View Report tab. Locate these reports under the directory used to rename the TarFile, as described in Figure 176: APSTAR Rename File Confirmation. Images of Report One and Report Two after they were created by APSTAR are shown in Figure 178: Listings of All files in a TarFile Report and Figure 179: After Creating TarFile Report.

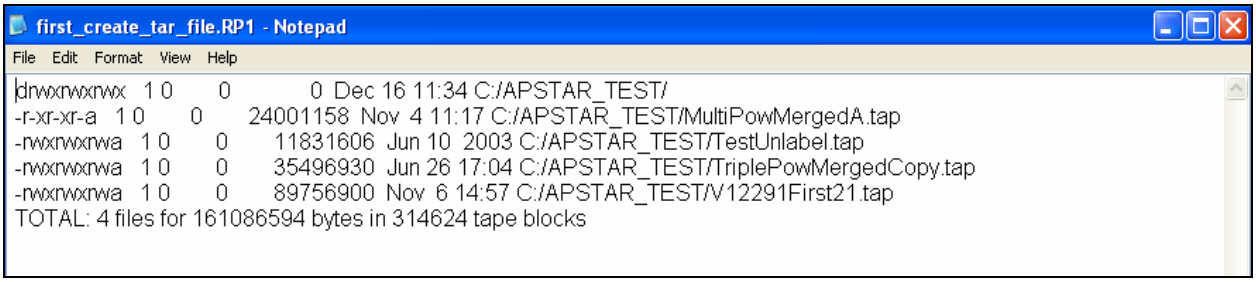

Figure 178: Listings of All files in a TarFile Report

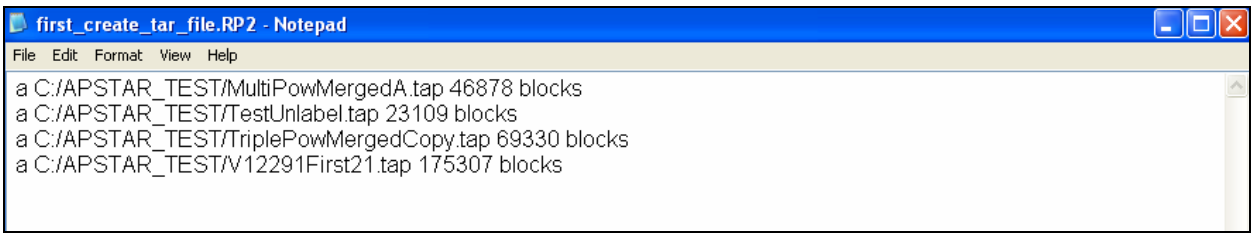

Figure 179: After Creating TarFile Report

This concludes the creation and renaming of a TarFile using the “TarAll” option. After this is completed, APS can be used to preserve the TarFile by generating a master copy as described in section 7.1 Generating Master Copies.

23.2.2 TarList Option

The second method for creating a TarFile is to use the TarList option APSTAR Create Tar File Screen . as shown in Figure 167: APSTAR Create Tar File Screen. Prior to accessing the TarList option, user must create a FileList using the “Create FileList” function from menu item Misc, as shown in Figure 166: APSTAR Startup Screen/ Menu Items. Click on “Create a FileList (TarList)” submenu item to invoke the Create TarList screen. This is shown in Figure 180: APSTAR Create TarList Screen.

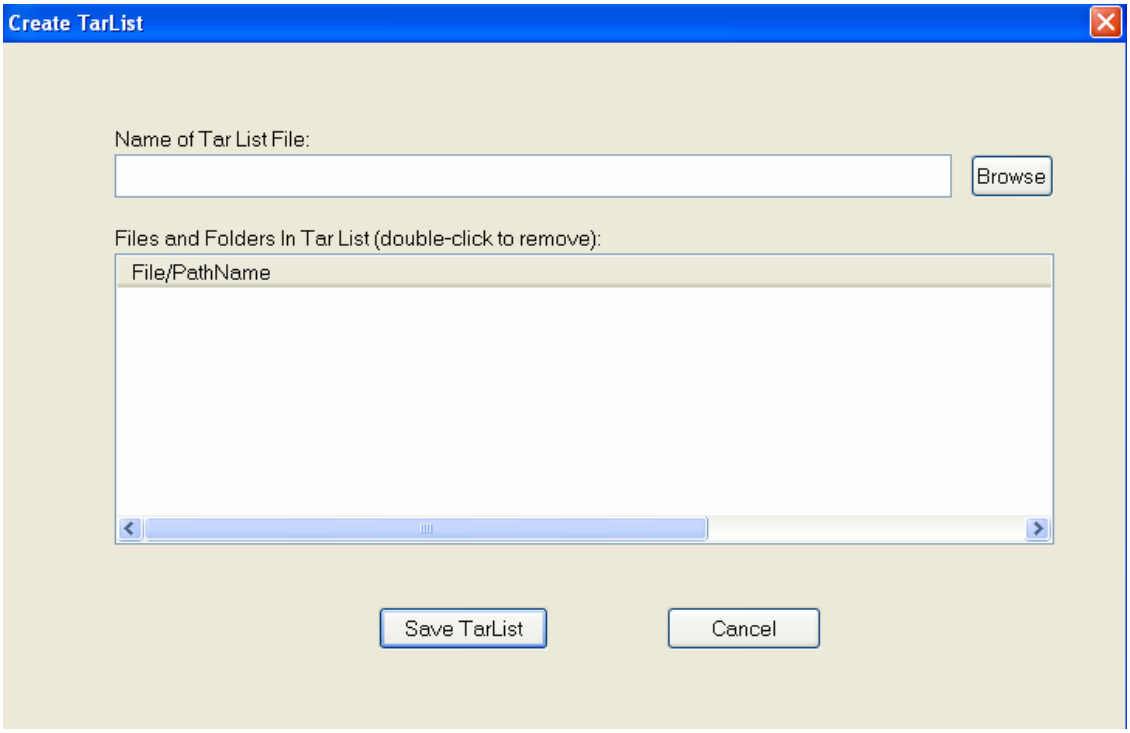

Figure 180: APSTAR Create TarList Screen

Click the browse button to display the Save As screen to name and save the file that will contain the TarList. This Save As screen is shown in Figure 181: TarList Save As Screen. Type-in the name of the file as you would want it to be saved and select the location to where you would like to save the file to. As displayed below, our example names the file “second_create_tar_file” and the file is located under directory ‘tar_test’.

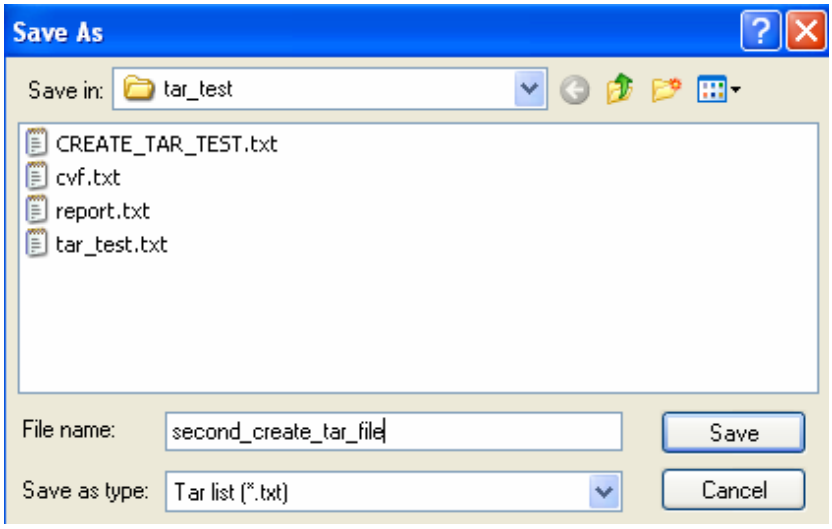

Figure 181: TarList Save As Screen

Click the Save button and note that the name of the file is now displayed on the screen. This screen is shown in Figure 182: Create TarList with Filename.

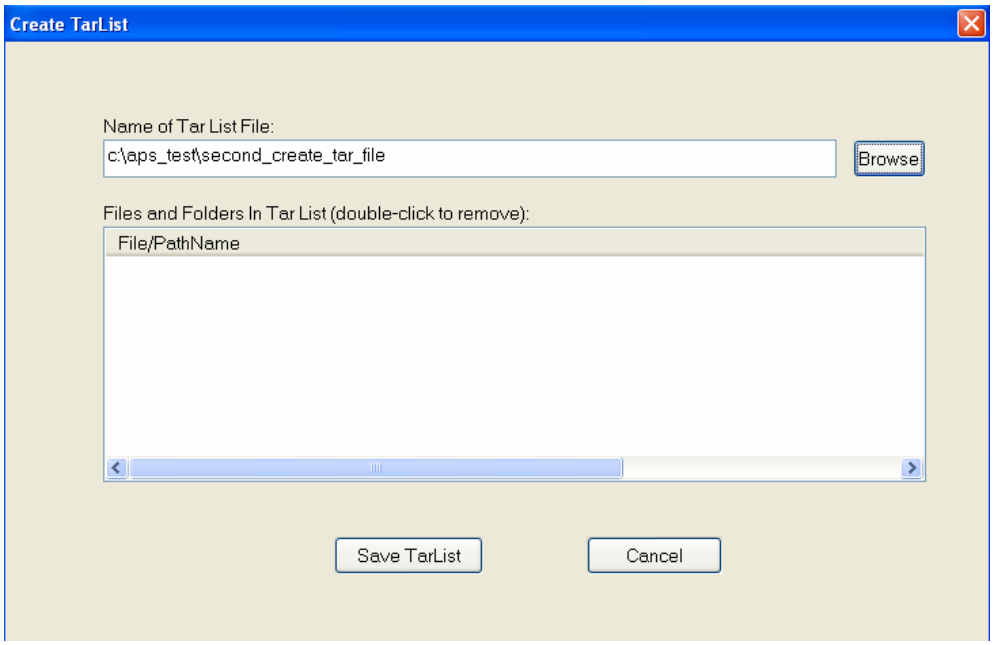

Figure 182: Create TarList with Filename

The next step is to move (or drag) files into the "File/PathName" block. To do so; open Windows Explorer and move the specific file by clicking on it once and holding the mouse button down and move the cursor to the "File/PathName" block. Alternatively, if all the files you want are located in the same directory, you can highlight them all and move them all in one step. This step is shown in Figure 183: Files to be Added to the TarList.

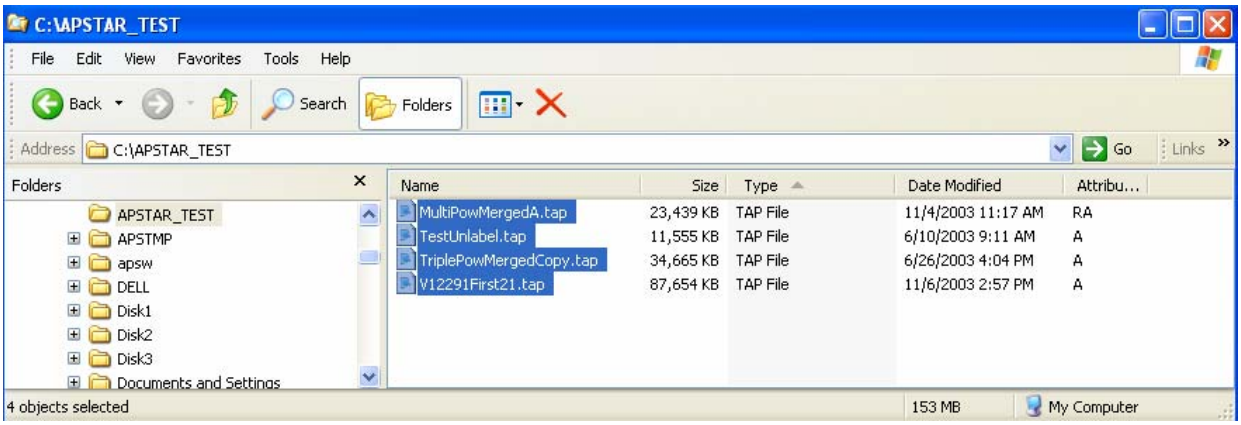

Figure 183: Files to be Added to the TarList

Create the TarList screen after the files are added to it. Note that the pathname and filename are displayed. This TarList is shown in Figure 184: TarList with Files.

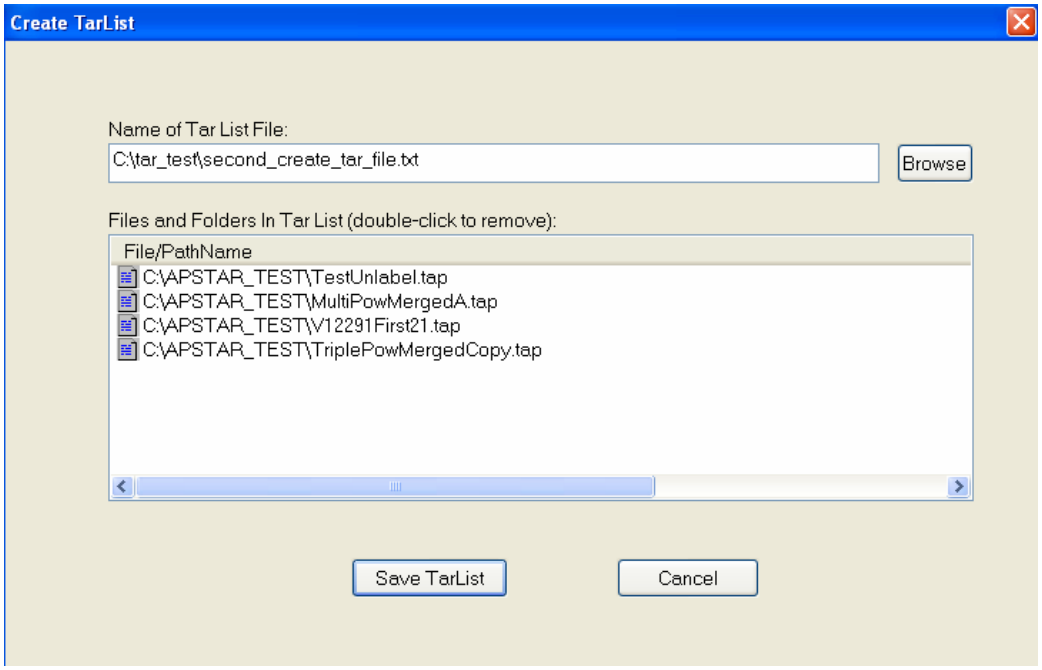

Figure 184: TarList with Files

You can remove a file from the list by highlighting the file and double clicking on it; a message will display asking you to confirm or cancel your action. This Delete Confirmation message is shown in Figure 185: Delete Confirmation Message.

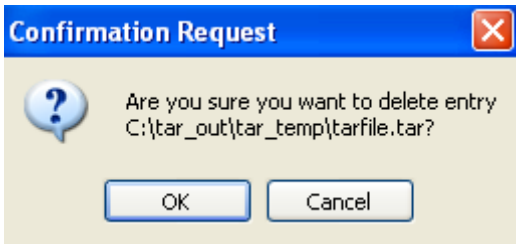

Figure 185: Delete Confirmation Message

Click Ok to close the message and delete the file or cancel to close the message and keep the file. Once all the files you want are displayed, click the Save TarList button. A message displays to confirm that the TarList is saved. This Delete Confirmation message is shown in Figure 186: APSTAR TarList Creation Confirmation.

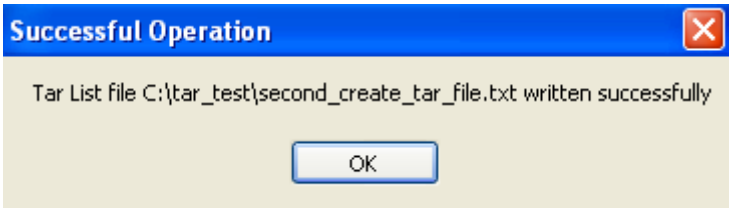

Figure 186: APSTAR TarList Creation Confirmation

Click the Ok button to close the message and close the create tarlist window by clicking the "X" at the upper right hand corner of the window.

Now the file is ready to be tarred. Activate the APSTAR Create Tar File Screen as shown in Section 23.2.1 above, and click on the TarList button. A message displays to inform you to select the list of files to be stored in Tar Archives. This message is shown in Figure 187: Information Message.

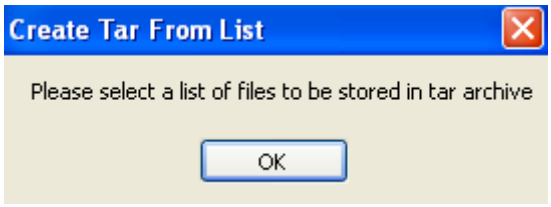

Figure 187: Information Message

Click Ok on the message box to close it. A new window displays allowing user to select and open the TarList file created earlier. This window is shown in Figure 188: Select TarList File to Open Window.

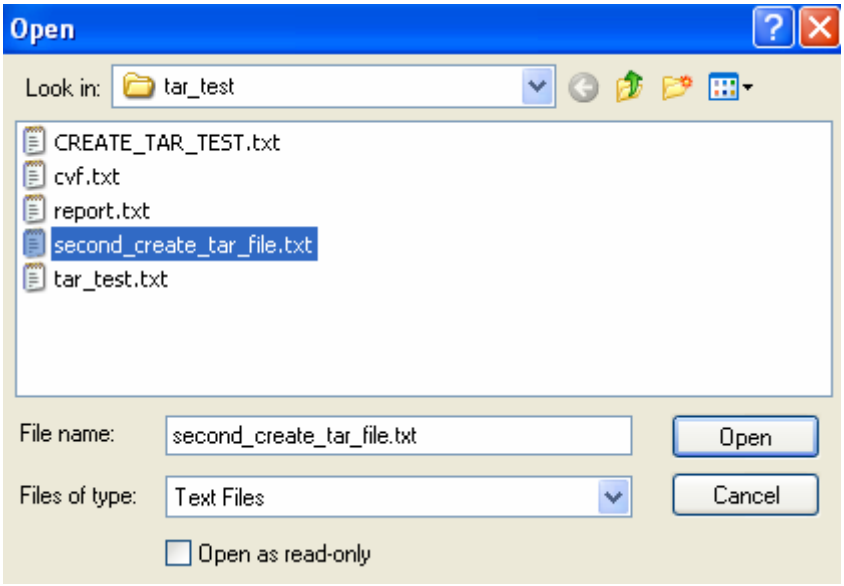

Figure 188: Select TarList File to Open Window

Click on the Open button to proceed with the creation of a TarFile. A series of messages are displayed to show the user the progress of the creation. A sample of the displayed messages are shown in Figure 189: Progress Message.. Note that the number of messages displayed is equal to the number of files tarred.

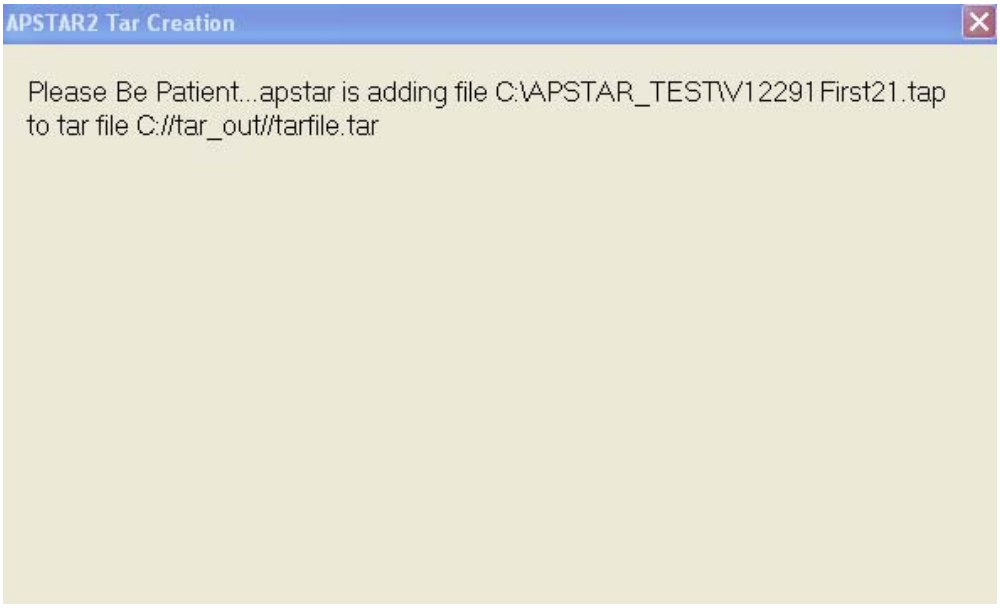

Figure 189: Progress Message

Once APSTAR has completed the process the message window will close and the APS TAR Create Tax File screen will be displayed, as shown in Figure 167: APSTAR Create Tar File Screen. You can view reports, rename files, save files or print reports similarly to the steps described above in Section 23.2.1, TarAll Option.